# The Iron A

#### A Review of the Hardware and Metal Trades.

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The year 1872 marked the beginning of a new era in blast furnace construction in the West. Western rivers.

The Lucy and Isabella furnaces now stand as heated to a temperature of about 900° Fah. types of the most advanced furnace construction, and their performances as the best yet known to our American furnaces.

tion, having blown in on the 15th day of May, 1872. The furnace is located in Pittsburgh proper, "between the rivers," and is situated on the bank of the Allegheny River, about four miles and a half from the "Point" where the Allegheny and Monongahela unite to form the Ohio. Switches connect the Allegheny Valley Railroad with the cast and stock houses. The grounds comprised originally about 10 acres, but these have been enlarged by filling to nearly 16 acres.

The furnace was built by Messrs. E. J. Bird and Wm. Tate. It is 75 feet in hight from the bottom to the level of the charging plate, and 20 feet in diameter at the boshes. The stack is an iron jacketed one, lined with fire brick with an independent iron gas flue, or "down corner," around which winds an iron stairway leading to the top. The stock is lifted to the tunnel head by a pneumatic lift.

The details of the present

BURCK RIC RO TOHOWS .
Feet
Hight of stack
Diameter at boshes
Diameter of Hearth at bottom. 9
46 at top 9
Hight 8
Hight of bottom of tuyeres from bottom
of hearth
Number of tuyeres 5
Diameter of tuyeres
Hight of boshes from top of hearth16
Dismester of termed bearing to nearth19
Diameter of tunnel head10

The lining from the boshes draws in gradually to the point where the furnace is 16 feet in diameter. From this point the furnace is straight to a point 6 ft. 10 in. from the top, where it draws in for the tunnel head. That is, from the boshes to a point at which the furnace is 16 feet in diameter the shape of the interior is that of a truncated cone, above that a cylinder. The walls of the stack are brick, varying in quality from the best fire brick to common red brick. The fire brick lining is 2 feet 6 inches in diameter. The walls rest on a cast iron ring or entablature, which rests on a ring formed from wrought iron beams, the whole

supported by columns. The throat of the furnace is surrounded by an overhanging charging platform of plate iron, supported by iron brackets. The charging ap paratus is the cup and cone, raised and lowered by an air cylinder. The hot gases are taken off just at the top of the cylindrical portion of the furnace before mentioned, and are brought down in the "down corner" referred to above. The flue to the boiler house is entirely above ground, and is made of riveted boller plates, and varies in diameter from 6 feet to 4 feet. The main part is lined with fire brick. The flues were formerly made of fire brick only, in, and the present arrangement was adopted. The hot-blast main, where it encircles furnace, is hung by straps connected with the boiler plate easing or shell of the furnace.

In the rear of the furnace, between it and the stock house, are situated the hot-blast ovens. 4 in number. These are placed two on each side of the lift, which is immediately in the rear of the furnace. These are each 17 feet 6 inches by 13 feet 9 inches, and consist of a series of vertical U pipes of flattened vertical section, made of cast iron 1 inch in thickness, the major ones of the interior cross-section being 16 inches and the minor 4. These are in three rows of seven each, set in a cast iron box over the hole, and a smart blow with a hammer tons. whose upper surface serves as a bed plate for

60 feet high. These furnaces were modeled in cal main into a horizontal flue 4 feet 6 inches out and removed. many respects after the earlier charcoal furnaces, and the still later anthracite one. The brick, which extends along in a straight line bustion chamber, the supply of air to which can During the year above mentioned, four stacks be regulated; from this they pass through of a widely different type were blown in in flues in the roof into the heating chamber. Pittsburgh. These stacks were larger, higher, Both of these chambers are lined with fire more complete in details, with larger tuyeres brick; the exterior of the oven is of red brick, and more complete in details, with larger tayers of the vertical direct-acting type. The results of this rods. The roof is brick. The cold blast passes

The auxiliary blast engine for working the vertical direct-acting type. The results of this rods. The roof is brick. The cold blast passes new departure is now known to the world. in at the back, and emerges at the front

Hoisting of material is accomplished by means of a pneumatic lift, the base being on the general level of the stock house (10 feet below tration on this page, was the first, of the feet long and 36 inches in diameter, made in fron bed plate. They are provided with poppet four stacks alluded to above, to get in operalengths and bolted together, and bored valves. The slide valves of the steam cylinder

The Lucy Furnace, Pittsburgh, Pa. to the opposite extremities of which the struction and operation this machine is per- for the second has just been begun. It will ft. long, and of such width as to reach from bot and cold blast mains are connected. By second is made as to reach which as the reach which as to reach which as to reach which as the re compelled to travel up and down the pipes in a from a spout. There are seventeen cinder the new 30 inch fire brick. At present only the They are floated to their places against the line The typical furnace before that time had been from 12 to 14 feet in the boshes, and from 48 to led down from the furnaces through the verti-

There are in the engine house three blowing engines for the furnace and an auxiliary blast blowing machinery was either of the horizontal in front of the ovens and boller house. From lengine to work the hoist. The former are vertype, or, if vertical, were beam engines, and often of the style used on the steamers on the flues, 24 inches in width, into an arched com-hill & Co., of Pittsburgh, and are of the fol-

	lowing dimensions.	
	Diameter of blast cylinder84	inches.
	Diameter of steam cylinder 35	6.0
	Length of stroke 4	feet.
3	Diameter of fly-wheels	6.6
	There is a foundation for a fourth	engine.

pneumatic lift was built by the Keystone Bridge Company, and is of the following dimensions Diameter of blast cylinder... Diameter of steam cylinder Length of stroke..... Diameter of fly-wheel...

In these engines the blast cylinder is placed The Lucy Furnace, the property of the Lucy that of the furnace), and accessible from it. above the steam cylinder, being supported by Furnace Company, of which we give an illus- It consists of a simple cylinder of cast iron, 92 cast iron standards bolted down to the cast

out of blast.

Henry Phipps, Jr. These gertlemen are also mattress dam and an additional row of piles the owners of the Union Iron Works, Pitts- were finally needed to make the Kipp arm burgh, and the coke works already referred to. They are also large owners in the Keystone Bridge Works and the Edgar Thomson Steel

#### The Mississippi Jetties.

of Major C. B. Comstock on the progress of positions. Several mattresses near low water the work at South Pass, which has been sub- level, although loaded with stone, have been mitted to Congress:

on the east side of the pass, follows the general the jetties. To prevent this displacement in direction of the pass, and curves slightly to the the future the plan has been begun of driving westward, the intervals between the piles piles about once in 35 ft. along the channel varying from 8 to 20 ft., and the length of the edge of this upper tier of mattiesses, and

ing the intention to run it only when No. 1 is in position along the Kipp dam, the head water of 8 or 10 inches resulting, scoured out a hole The furnace is owned by a company consist- in and below the dam, carried away several ing of Messrs. Andrew and T. M. Carnegie and piles and a part of the apron, so that a were finally needed to make the Kipp arm

On the east side of the sheet-piling of the east jetty the bottom has been scoured out pear to the piling in some places to the depth of several feet by the action of the waves and the varying difference of water level on its two sides. Both results show the difficulty attend-We condense the following from the report ing the use of sheet-piling or planking in such lifted off their beds and slid channelward by A row of piles starting from the land's end the action of the waves on the exposed parts of

> through the lower tiers. The experiment was also tried of driving stout stakes 4 or 5 ft. long through the top mattresses and into that below. It is reported that some o the piles at the outer end of the east jetty, which have been driven about five months, are badly honey-combed by the

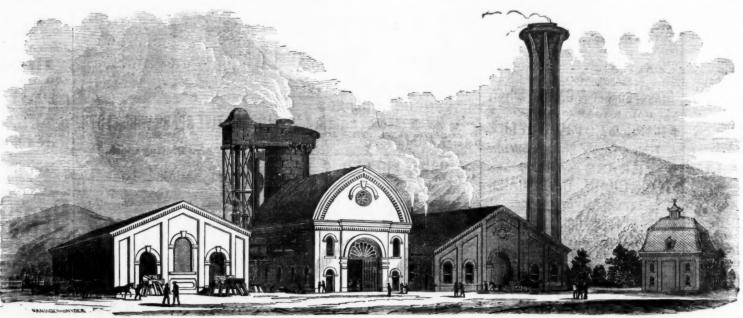
On Feb. 7 the distance from the end of that portion of the east jetty which was up to low water mark from the end of the jetty was about 1000 ft. The corresponding distance for the west jetty was about 1800 ft. As far down as that point of the west jetty the river current was thoroughly confined. On comparing the soundings, herewith transmitted, with those on the map accompanying my report of Nov. 20, 1875, it will be seen that, counting from the head of the east jetty downward, the depth of the water from the first 2000 ft. from the head of the east jetty has not materially changed. In the next

2000 ft., reaching to the head of channel makes a double row for 5004 ft. from on an average by about 4 ft. In the next 3000 the land's end. This second row has a line of sheet piling driven on its east side for its tions of the jettles which are up to low water, whole length. Along the channel side of the the deepest water has increased on an average second row of piling, as far as it extends, and by about 3 ft. From this point to the end of then along the channel side of the first row of the jettles, a distance of 1000 ft., the scour has piles, mattresses, all touching the piles, have averaged about I foot, but with some filling at been sunk, superposed on each other so as to the immediate end of the jettles. A rew sound-make a continuous dam. The lower layer of ings made on February 25, showed a considermattresses is usually from 40 to 50 ft. wide, the able scour since Feb. 7, and that by following widths of the layers diminishing toward the the deepest water 12 ft. could then be carried surface of the water, where they are usually 25 out of the pass at average high water. On ft. wide. At first the mattresses were allowed March 5, I am informed that a schooner drawto sink in their places by the accumulation of ing 13 ft. was, with some difficulty, taken to sea through the South Pass.

> A telegram from Capt. Eads, dated New Orleans, April 27th, says:

"The Grand Republic went into the gulf and returned yesterday. The channel was buoyed, and careful soundings were made under the di-rection of Capt. Thorwegan and others. Least rection of Capt. Thorwe, an and others. Least depth throughout the entire channel was 15 ft. 4 in., the tide being then one foot below average flood. This is a gain of 10 inches since April 15. The report of shooling in advance of the jetties is a malicious falsebood. We have very decided deepening there also. Inform Merchants' Exchange that I will have nothing to do with request for use of government dredge, as stated in my reply to Mr. Highy. I can await the unaided but certain action of the jettied current to secure our payments as patiently as the public can await a deep channel at the mouth of the Mississippi."

Professor Abbe, of Jena, asserts that the limit of a microscope, in showing the structure of the tissues and the character of minute objects, has now been nearly, if not entirely, reached-higher power than at present in us. for a distance of 5900 ft. from its head, and op- giving rise to optical phenomena which are likely completely to mask the structure and naft. further down. On the west side of the main observations apply more especially to the markrow of piles a single tier of mattresses has been ing of certain diatoms and striated muscular carried down 4200 ft. from the head of the west fiber. According, however, to the results arjetty. In the progress of the work on the west rived at by Professor Abbe, after prolonged and very careful investigations of the subject, by no microscope can structural parts be distinbringing the mattress jetties up to the water guished if they are so near to each other that surface, an attempt was made to close the Kipp the first bundle of light rays produced by dam and the upper \$000 ft, of the west jetty by diffraction can no longer enter the object



THE LUCY FURNACE, PITTSBURGH, PA.

two platforms, one on each side of the cylin- tremity with a 14 foot fly-wheel, placed outside der, and is connected with the piston by two of the standards. iron ropes 1 inch in diameter, fastened to the center of the cage on each side, which pass engines were running at 30 revolutions per over pulleys at the top of the cylinder. It is also provided with wheels running on iron guides on the surface of the cylinder. The larity in the working of the furnace occasioned hoist is worked by admitting the blast from by this led to the use of the small engine. the auxiliary blast engine described below, into the cylinder alternately at the bottom and top by means of valves.

In the engine house are placed the two boiler feed pumps, which are Keystone pumps, built by Epping Carpenter & Co., of the following

The relative position of the cast, stock, engine and boiler houses can be seen from the engraving, and do not need any description. They are very neat and substantial, and as near fire-proof as possible.

Among the novelties to be seen at these for cooling slag, invented by Mr. Andrew Klo- the same. These pumps are : merely to cool the slag quickly in blocks of Stroke convenient size for removal, thereby saving water trough, with supply and waste pipes, in which, by suitable appliances, a series of cinder boxes are caused to rotate, so that they may be brought successively under the slag spout. The boxes taper slightly toward the bottom, so as to admit of the easy withdrawal of the slag tails. The larger part of the product is Bessecakes when sufficiently cool. On the bottom of each box is placed an iron wedge with a broad flat head, upon which it stands upright, from their own coke works at Carpenter's Staand with a hole in the taper end by which it tion, on the Pennsylvania Railroad, the coke and then of cast iron plates, but they soon fell may be lifted out. The slag runs in around being made from washed slack. From 3000 to these wedges, which stand up in the middle of 3200 lbs. of coke are used to a ton of pig when the boxes and project for some inches above the making Bessemer, and 2800 to 2900 when runupper crust. Around, under and between the ning on mill iron. When the size of the tuyboxes water flows continuously, and their inner eres was increased to 8 inches, it was found surfaces are kept so cool that in a few minutes that the consumption of coke could be very the slag is sufficiently solid to be removed in much reduced on a make of 500 tons, but it small hydraulic crane. The hook at the end of runs at the cost of more fuel. the chain is fastened in the hole in the taper end of the wedge, and the cake is lifted out of been on mill iron, 7621/4 tons; on Bessemer, the box and deposited on the floor of a cart, 745. The make of the furnace since it went which has a square hole in its bottom to facili- into blast is as follows, in tons of 2000 lbs. : tate the recovery of the wedge. The slag cake Make in 1872, 13,361% tons; in 1873, 23,3461% is so placed that the head of the wedge comes tons; in 1874, 27,860 tons; in 1875, 26,563%

In | throughout, in the interior of which is a | are of peculiar construction, the invention of | row being 11,941 ft. In November the outer | the west jetty, the deepest water has increased loosely fitting piston with balance weight. The cross-head is between the cage surrounding the cylinder is provided with two cylinders, and is connected at each ex- A row parallel to the first and 12 ft. nearer the

It was found that when two of the blowing

In the engine house are placed the two boiler

unnen	SIUIIS :															
Steam	cylinder		 	 					*						.10	inche
Water	cylinder									 				į.	 . 6	6.6
Stroke										 					.12	4.6

which are placed on the bank of the river in the works is a very simple and practical machine pump house, the tank being under the roof of

The boilers are eight in number, cylindrical, both time and labor. It consists of an annular 42 inches by 60 feet, placed in batteries of two each. But three batteries are needed to run the furnace. In the boiler house are placed two No. 9 Stillwell heaters.

We have so often referred to the working of this furnace that we need not enter into demer pig. The ores used are entirely Lake Superior; the fuel, half Connellsville and half The transfer is effected by means of a was found more economical to make larger

The largest week's work of this furnace has

causes it to drop out upon the ground. The | The Lucy Furnace plant was originally dethem, and at one side of which is a tube, cake is then carried off and dumped. In con-signed for a pair of stacks, and the foundation

The general water supply of the furnace is sediment; latterly they have been usually furnished by two pumps of the same make, sunk by rubble stones thrown on them. Capt. Brown states that on the mattresses 25 ft. wide. near the surface of the water, about 10 pounds of stone are now used per cubic foot of mattress, and about 5 pounds on the 35 ft. mattresses which are nearer the foundation. On February 7 this jetty, including the sheet piling, was up to low water for a distance of 10,731 ft. from the land's end. The foundation

> A row of piles, forming the west jetty, from 16 to 20 ft, apart, and 7704 ft, in length, runs approximately parallel to the lower portion of the piles of the east jetty, and at a distance of 1000 ft, from it. Another short row, at what is called Kipp's Dam, connects the head of this main row with the west shore of the South Pass. Mattresses have been placed against the upper side of this short row, and the dam raised above water. On the channel side of the main row the mattresses have been brought up to low water posite a point 9944 ft. from the head of the east jetty. The foundation mattresses extend 500 ture of the object under examination. jetty, and apparently to obtain some scour more rapidly than by the slower process of planking, called aprons. These aprons were of simultaneously with the undiffracted cone of plank fastened to string pieces, were 75 or 100 light.

mattresses extended 550 ft. further.

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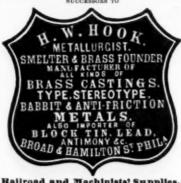
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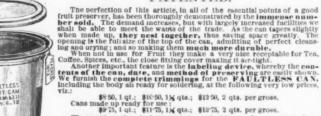


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#### A New Mediterranean.

In our issue of last week we briefly referred to the scheme proposed by Mr. Spalding for re filling the Caspian Sea. A paper by that gentleman, now being translated into Russian by Col. Maller, of the Russian War Department gives a fuller account of this great proposed

In the course of the paper, which has been sub mitted to His Excellency, Peter Semenoff, President of the Imperial Geographical and Statistical Commission, Mr. Spalding says that through the operation of certain laws a great desert is in process of formation in the midst of the Russian Empire. The question how this disaster may be averted for some thousands of years, and how, by a counteraction, and to some extent a reversal, of these processes, great adantages, commercial, industrial, political and ocial, may be secured to this region and to the empire, form the subject of the paper. In considering, says Mr. Spalding, the sources whence the requisite supplies of water may be drawn for the purpose of preventing the disaster I have alluded to, we are brought to two conclusious-first, that the supply should be ample and unfailing; secondly, that the works by which this supply is secured should be fully equal to any demand for maritime purposes These requisites are only to be found in the direction of the Black Sea. This sea, by means of its connection with the Mediterranean, can furnish both the water supply and the maritime facilities for commercial and naval communica tion with all the world. By means of a cutting, about two hundred and fifty versts in length, across the ridge dividing the two seas, connecting them upon one level, these results can be obtained with certainty. This cutting should be, when completed, an artificial strait, deep enough for ships of any draught, and wide enough for ships of any width to pass each other. Here, of course, the usual objection arises that the cost of such a work would be so great that it can never be executed. nor made profitable when completed. Neither of these objections is tenable, if the best method of accomplishing the work is employed, and if the question of loss or gain are fully The way to construct such a work onsidered. presents itself first in order, and it will be shown that this is easier than has been hitherto supposed. Beginning in the basin of the Cas pian Sea, at a point 15 meters below the level of the Black Sea, a level cutting 150 meters wide should be made westward, to such a distance that at its western extremity it would reach a depth of 10 meters. The surface of the earth at that point would be 5 meters below the level of the Black Sea. Here this broad and deep cutting should be discontinued, and a which, with certain exceptions, should be carried all the way across. The broad and deep it inconsiderable; yet, by its formation, it would, in the end, govern the character of the

If, between this and the waters of the Black ea, a cutting only 5 meters below the sea level at one end and 3 at the other, 50 meters in width, were to be made, the water would flow through it at a speed of about 12 kilometers per hour, and upon reaching the end would be precipitated down a fall of 10 meters in hight into a basin thrice as broad as the channel whence they fell, and from which an easy exit would be made into the Caspian Sea. The effect of this outfall into earth of ordinary consistency would be to give it a tremendous exavating power. The force of the water, acquired by this plunge, would be exerted in excavation in four directions-first, in deepening the waterway at the foot of the fall; secondly, in cutting away the earth around the three sides of the basin; while the fact of its nearness to a still greater outfall would give it such rapidity of current in the lower channel that for a long time it would carry with it into the sea all the material thus excavated.

The movement of the water through the Caspian to that of the Black Sea. This would fill the present area of the Caspian to the it would be enlarged by the process from about would go on very should have become enlarged to its full dimenmeters per hour, so that at the end of 40 years from the beginning of the work the levels or the two seas would be so nearly uniform that navigation of the new channel would begin. This time could be shortened to about 25 years, if, upon the completion of the work already described, a sufficient quantity of the plant employed in that operation were to be a cutting sufficient to let the waters of the Don

The cut from the Don could be cheapened and expedited by the construction of a dam be- the valve had to be closed before the mat could low the cut, which would temporarily set its be fixed. When properly placed it stopped the The most complete assortment in the U. S. of Shank, Socket Firmer, and Socket Framing waters at a higher level. In this way the ex- water to such an extent that the leakage was cavation of a less amount of earth by steam not more than what a ship could easily clear with would be necessary, and the increased fall of her pumps. The cost of this mat is less than water would enlarge this channel to dimensions that of a Makaroff mat, its efficiency equal, and as great as the other. As soon as the waters of the faculities for being secured in its place the Don had cut a passage to the Volga suffi- superior. It is therefore probable that this new ciently below its natural bed, the dam could be mat will be the pattern adopted in the service.

removed, when, if the old bed of the river be tween this point and the Sea of Azof were low nough to allow it, the waters of this sea would well the volume discharging into the Caspian by the simple process of reversing the current of the river between these points. A similar work was performed in America by cutting through the ridge of limstone which separated the waters of the Chicago River from those of the Illi ois River. The result was that the current of the Chicago was reversed, and it now discharges ts waters, as well as those of Lake Michigan, into the Illinois, and through that, via the Mis sissippi River, into the Gulf of Mexico, instead of the Gulf of St. Lawrence. If it were pos sible thus temporarily to reverse the current of the Don, the effect would probably be to deepen its channel and render it navigable for large steamships. The temporary inconvenience caused by such an operation would be repaid by increasing the usefulness of that river, and by naking it also a part of the new field of comm cial and industrial operations. The labor of cutting these two water ways should be performed by steam, and the plant used for the first could afterward be employed upon the second. With an efficient equipment the entire work upon both should be completed in 6 years. pense upon the above plan for making the excu vations necessary for replenishing these great interior basins would not exceed one-third of the cost which would be incurred in constructing these works by the usual method, so that the outlay would be brought within reasonable limits. The material excavated near the Black Sea should be deposited in the sea in embank ments. Each of these lines of embankment should extend into deep water, where they should converge until the opening between them should be 500 meters. As material would be abundant, the embankments may be broad, thus insuring permanence, and the interior space would form a safe and capacious

This new Mediterranean could be made a Russian lake. By the adoption of a similar rule to that applied by the United States, all foreign ressels would be excluded from these waters, The result would be that among the fishermen and nomads of those districts would grow up a race of sailors to navigate the great commercial fleets which would soon exist there; and, beside this, it would be the training school for sailors for a navy.

An important improvement in the working

of cupolas has been introduced at the Edgar

Thomson Steel Works, in Pennaylvania, as the result of the ingenuity of the superintendent. Mr. William Jones. There had, it appears, been some difficulty with the cupola scaffoldarrower and shallower cutting should begin, | mg, and retarded the work. To remove the sc affold Mr. Jones conceived the idea of forcing fresh fuel through the tuyere-holes, and excavation would be short, and the expense of thus melting down the salamander. Having taken out the tuyere pipe, he rammed in as much small coal as possible, and again put on the blast. The effect was that in a few minutes the entire scaffold was removed, and the work proceeded as usual. To prevent further delay from scaffolding Mr. Jones has perforated the blast-pipe, and now infuses into the blast a portion of small coal, which is carried by the blast through the tuyeres into the cupola. There has been no scaffolding since this change was made, and the working is so much im proved that twice the quantity of iron is dealt with in the same time. But this is not the most important advantage secured by this invention. It is well known to metallurgists that the great waste of iron in melting in a cupola occurs at the zone of the tuyeres, on account of the immense amount of air blown in, and the absence of carbonic oxide at that point, What little carbon the air comes in contact with at this point forms carbonic acid, which is almost as destructive to the iron as free oxygen. The principal waste of the metal occurs after its fusion and in its passage through this carbonic acid and atmosphere. By the injection of the fine coal with the blast its combuschannel of 3 by 50 meters at a rate of 12 tion is secured at the zone of the tuyeres, prokilometers per hour would fill a space in a year ducing carbonic oxide, and thus preventing the equal to 523 square kilometers from the level of oxidation of the descending metal. The descending column of coke and metal retards the upward flight of the coal, consequently it is level of the Black Sea in about 700 years, but as projected downward, and forms a protecting covering on the face of the liquid metal and 493,000 square kilometers to about 700,000 prevents its oxidation. It is remarked that Mr. Jones' process not only saves the waste of slowly until the channel of the new strait iron, but it also transmits to the converter a much larger percentage of the carbon which This enlargement would proceed at the the pig contains, a very important considerarate of about one verst per week ; as the entire tion. In conclusion, this improvement is not distance to be enlarged would probably not exceed 300 versts, it would be completed in about six years, after which the filling would proceed with a current of about 20 kilo- is that the carbon is burned out of the metal, is that the carbon is burned out of the metal, making it hard. With this process not only is loss of metal avoided, but the metal runs more fluid and produces finer eastings.

A new collision mat for iron ships has been manufactured in England, twelve feet square, with three thicknesses of canvas. The first sheet is thrummed, the second oiled and dried, the used in repeating it, by connecting the rivers third, or outside, pan ted and roped around its Don and Volga. The work there being shorter, edges. Inside the mat is thickly fitted with third, or outside, pan ted and roped around its it would be completed with greater rapidity, and beckets, that t may be easily secured to its place. The nat was tested at Keyham in the flow through in the manner already described same manner and at the same caisson as the could be excavated and enlarged by the water | Makaroff mat. The aperture in the caisson was at about the same time as that from the Black twelve feet down and eighteen inches square. The same diffic sity was experienced in getting the mat in its place as with the Makaroff, and

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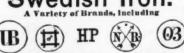
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North Carolina Handle (WILSON & SHOBER, Proprietors.)

Manufacturers of SPOKES, AXE, PICK, SLEDGE, HAMMER, HATCHET, and other midles. Full assortment always on hand.

New Patents.

We take from the records of the Patent Office certain patents, lately issued, which will be found interesting:

IMPROVEMENT IN CUPOLA FURNACES Eugene Voisin, of Bourges, France.

The object of these improvements is, first, When the receiver contains a sufficient to effect the combustion in the interior of the quantity of metal for the required casting nary construction of a cupola furnace are burnt greatly increase the melting power of the furnace, and keep the throat of the furnace comparatively cool; secondly, to enable a much arger quantity of molten metal than hitherto to be collected from a furnace at one time, thereby effecting an economy of time and labor where large castings have to be made.

To carry out the first part of this invention, employ, instead of the ordinary tuyere or tuyeres, a definite number or set of tuyeres, tained between the two rows of tuyeres, it be- the requisite quantity of atmospheric air for which is highly combustible; place a second furnace.

the concussion of the pieces of metal thrown into the furnac

at Washington the following specifications of at the back of the cupola, and constantly communicating with the crucible or hearth C by means of the opening O in the lower part of 175,268,-Saw Handle,-To Eben M. Boynton, the sole plate, thus allowing the molten metal Specification forming part of Letters Patent to run from the crucible into the receiver while 1. In combina No. 172,836, dated February 1, 1876, issued to still remaining in communication with the handles B and C.

metal in the crucible. furnace itself of the gases, which in the ordi- the furnace is tapped, and the liquid metal passes from the receiver through the opening at the throat or top thereof, to economize fuel, O, and through the hot furnace out by the door P, having retained nearly the whole of its heat by being constantly heated by the incoming hot metal from the crucible.

When the receiver is not required the open ing O is stopped up, and the cupola may then be used as if it had no receiver.

The improvements hereinbefore described are applicable to ordinary cupolas.

Claim .- 1. In a cupola furnace, the described combination and specific arrangement of tuywhich act on and utilize the coke to the full eres in two rows of equal number, the sectional extent in the ordinary manner, producing carbonic acid gas (CO<sub>0</sub>). This gas is incombustible, exactly one-half that of each of those of the but, passing through the red-hot coke con- lower row, and serving to supply to the gases omes transformed into carbonic oxide (CO), effecting their thorough combustion within the

1. tr -- tw A

IMPROVED CUPOLA FURNACE,

set or row of tuyeres, equal in number with 2. In a cupola furnace, a second (as distintue lower ones, and of such specific dimensions) guished from a third, fourth, or other) set or shall serve to supply to the above-mentioned combustible gas (CO) just the quantity of air necessary for effecting its thorough combustion in the interior, instead of letting it burn to waste at the throat of the furnace, as hitherto. serving to create a second zone of fusion by This second set of tuyeres is so placed that the consuming and thoroughly burning in the insaid combustible gas is consumed while it is in terior of the furnace the gases which have zone of fusion, thereby considerably reducing scribed. the consumption of coke and accelerating the melting power of the furnace.

the cupola, and is the same for each row.

The two rows or sets of tuyeres are always worked together, the air being supplied there-to from an annular distributing chamber formed on the outside or within the iron casing of the furnace, and communicating with the Red Wing, Minn.-March 28. fan or blast engine.

The second part of this invention consists in the application to or placing at the back of cupola furnaces of a chamber or receiver on the serrations rr and notches nna level, and always in communication, with the crucible or hearth of the furnace, in such a way as to cause the molten metal to retain its heat while it is being collected, thereby enabling a larger quantity of metal than hitherto to be run off at one time, and so allow of large castings being made from a comparatively

Figure 1 is a front elevation of a cupola fur nace with the first part of improvements applied thereto. Fig. 2, vertical section of a cu pola, showing all improvements applied there

Similar letters in all the figures represent similar parts.

A A, Fig. 1, is the annular distributing chamber for supplying air to the tuyeres. In the drawings this chamber is shown placed outside the furnace; but it also may be placed within the iron casing, as hereinbefore described. B is a pipe for conveying the blast into the chamber A; T T, the first row of tuyeres for burning the coke producing the gas CO2, and forming the first zone of fusion; t t, from each other of from 1 foot 8 inches poses. for small cupolas, as shown in the drawing, to 175,264.—Lifting Jack.—David T. Welch, St. 2 feet 4 inches for large cupola furnaces. The area of the section of the second or upper row first row of tuyeres.

glass, to allow of examining the progress of of the screw. posite the tuyeres. P is the ordinary door for drawing off the molten metal from the crucible; G, cast iron lining to protect the brick-work at 175,284,—Anvil Bed.—Alonzo Hitchcock, New the throat of the furnace from the effects of | York, N. Y.-March 28.

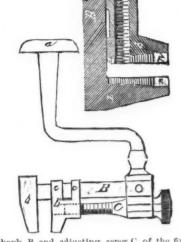
sions, as compared with such lower ones, as row of tuyeres, having the same number of contact with the metal, thus producing a second | hitherto been consumed at the throat, as de-

3. The combination of the receiver R at the back of the cupola furnace with the crucible The gases being consumed in the interior of or hearth, whereby the metal in the receiver is the furnace no flame is produced at the throat in constant communication with that in the of the furnace while it is charged. The num- crucible, and free, when the furnace is tapped, ber of tuyeres varies according to the size of to pass back through the intensely heated earth of the furnace, as and for the purpose described.

We take the following abstract of new pateuts, issued March 28, from the official record: 175,272.- Wrench and Bit Stock.-W. F. Cross, The jaws are constructed to receive a nut or

the shank of a bit. 1. In a wrench, the jaws bb', provided with

2. The combination, with the brace arm A.



second row of tuyeres of a smaller size than the shank B, and adjusting serew C, of the fixed first row, and serving to consume the gas—oxide | jaw b and the movable jaw b', operated by the of carbon-immediately after its production, said screw, each having an angular notch n and thus creating the second zone of fusion. The transverse corrugations r, whereby the wrench two rows of tuyeres all placed at a distance is adapted to be used as a brace for boring pur-

Louis, Mo.-March 28.

An iron frame of two posts joined at top by of tuyeres is made one-half that of the lower or an arch, through which works a vertical screw, operated by a horizontal hand wheel or hand 8 S, cast iron sight hole frames, with colored spikes. A grapple suspended from the bottom

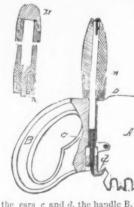
the fusion. These sight holes are placed op- 175,267.-Process of Compressing and Reducing Steel and other Ingots .- Geo. W. Billings, Cleveland, Ohio.-March 28,

An anvil bed, composed of atmospheric air nd water, confined and operating as described, In Fig. 2 R is the chamber or receiver placed so that a blow upon the anvil, causing its movement, acts to compress the air and communicate motion to the water

West Newbury, Mass.-March 28,

1. In combination with a saw blade, the

2. In combination with the saw A, provided



with the ears c and d, the handle B, provided with the hole e and the handle C, provided with the collar b and clamping book of

3. The tubular handle C, provided with a screw cap D, and the bolt n and hook o

175,289.— Tire Upsetting Machine. - John H. Koch, Bucyrus, Ohio-March 28. The movable jaw is actuated by means of a

ever pivoted thereto at one end, and in the middle to the bed, with the loose end thereof in the cam groove of the handle.

175,300.—Manufacture of Railroad',Rails. Reese, Pittsburgh, Pa.-March 28. 175,316.—Tube Expander.—C. Winord, Vienna

Austria-March 28. A tool for calking boiler tubes, and consistng of a mandrel, connected by a ball and

socket joint to a bar and handle. 175,322.-Tack Hammer.-W. C. Avery, Wallingford, Conn.-March 28.

75,326,-Portable Forge,-John Bayliss, New York, N. Y.-March 28. The segmental plate serves to direct the air

and cause it to pass around the chamber before it enters the central chamber. The tube for discharging the ashes is provided with safety valve. The double hood serves to retard radiation of heat,

175,380.—Screw Cutting Die,—John F. C. Rider, South New Market, N. H.—March 28.

The stock is of malleable iron, and has radial mortises, into which hardened steel cutters are inserted and fixed by brazing.

175,265.—Machine for Making Curved Lead Pipes,-Geo. W. Wicks, Brooklyn, N. Y. The annular orifice, (of an ordinary machine for making lead pipe), through which the lead is forced in pipe form, is provided on each side with an outlet, to allow a portion of the lead to escape on either side, as desired, thus lessening the quantity escaping on that side through the annular ornice, and consequently causing the pipe to bend as it emerges.

175,355 .- Wind Wheel .- Walter King, Richmond, Mo.

The two wings of this wind wheel are atached to one head and connected by a bent rod, so that each wing will assist the other in the quarter-circle shift which each makes. By means of cords passing from the tops of the wings down to the attendant below, he may lift and hold (by a fastening on the main shaft) any or all of the wings in a horizontal position, and thus stop the wheel. 175,391.—Privy Seat.—Branch Tanner, Cheney

ville, La. When not desirable to use the device for fecal matter, the seat may be swung back under the fixed cover; then the front apron forms the

urinal.
175,431.—Chain Pump Bucket.—William Cooper,
Ypsilanti, Mich.
The bucket has a rubber disk, provided with
circumferential grooves of suitable depth to
form bearing edges and air chambers.
175,503.—Cooking Stove.—Aaron P. Rich, Troy,
N. Y.

N. Y.

Air admitted through openings in the bottom of the stove is heated by the back of the fire pot, and circulates around the oven, and makes its exit into a flue adjoining the smoke exit. 175,522.—Machine for Reducing Diameter of Metal Tubes.—S. P. M. Tasker, Philadelphia, Ps.

The combination of two or more sets of rolls, graduated in size for reducing the size of the tube, each set consisting of three or more rolls, and so arranged that the rolls of a succeeding set shall press upon those parts of the tube between the pressure of the preceding rolls. 175,523.—Water Meter Dial.—DeWitt C. Taylor, Brooklyn, N. Y.

The following trade marks, bearing date March 28, was duly registered in the United States Patent Office:
3535.—Band Saw and Strip Knife.—Perin, Panhard & Co., Paris, France. Application filed Feb. 21, 1876.

"representation of a band saw stretched over The combination of two or more sets of rolls

Feb. 21, 1876.
"representation of a band saw stretched over two pulleys, with the words 'Perin & Cle' printed in the space between the pulleys, to the right and to the left, with the saw above and below."
3533.—Lamps.—Charles F. A. Hinrichs, Brooklyn, N. Y. Application filed January 3, 1876.

1876.
"word 'Kleemann.' "
3534.—Lead Ores and Fig Lead.—Mechernicher Bergwerks-Actien-Verein, Mechernich, Prussia. Application filed March 11, 1876.
"letters 'M M M.'"

37.—Stoves.—Isaac A. Sheppard & Co., Phila-delphia, Pa. Application filed March 9,

1876.
"Words 'Excelsior Cook.'"
The following label was also registered on the same date:
612—Title: "Standard Akron Salt Glazed Sever Pipe."—Akron Screw Pipe Association, Akron, Ohio. Application filed March 20, 1876.

The following design, bearing date March 8, 1876, was duly patented in the U. S. Patent

Office:
9166.—Heating Stove.—Conrad Harris and Edward Kummer, Cincinsati, Ohio, assignors to C. Harris & Son, same place. Application filed March 19, 1874. Term of patent 7 years.
The following trade-marks were registered during the week ending March 28:

Eron.

CLEVELAND.

IRON AND STEEL,

HORSE SHOES, HORSE NAILS, NORWAY NAIL RODS,

NAILS, SPIKES, "Standard Taper" Axles & Swedes Iron. WINDOW GLASS,

Wrought Iron Pipe and Boiler Tubes. halus, Rivers, Nuts, Washers, and Heavy Hardware Generally. 25 27, 29 & 31 Merwin Street,

CLEVELAND, OHIO. The Iron-Masters'

Pig and Manufactured Iron, Steels, Limestone Clays, Slags & Coal for Practical Metallurgical Purposes.

No. 339 Walnut Street, Philadelphia. J. BLODGET BRITTON.

This Laboratory was established in 1866, at the insta This Laboratory was established in 1866, at the instance of a number of practical Iron-masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively expensive a ijunct to the Furnace, Forge and Rolling Mill.

#### CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in an		
ordinary Ore	84 (	00
For the per cent. of Pure Iron, Sulphur and Phos-		
phorus in do	12	50
For each additional constituent of usual occur-		

For those of unusual occurrence or difficult to de termin, the charge must necessarily depend upon recumstances.

For the percent. of Carbonate of Lime, and Insoluple Silicious Matter in a Limestone...... For each additional constituent ...

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113 Walnut St., PHILADELPHIA. Special attention given to analysis of Iron and Steel

GEORGE W. BRUCE No. 1 Platt Street, N. Y.



brand of strictly pure crystalized Borax, in barrels and cases, at greatly reduced prices. Apply for terms at CHAS. PFIZER & CO.,

Manufacturing Chemists, New York

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last, Vacuum and Hydraulic Gauges, Engin-Pyrometers, Buss Putent Governor, Steam Valves, etc. Sole Depot. W. HEUERMANN,

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MERCHANT BAR IRON.

Flat Bars up to 6x2. Rounds and Squares up to 4 inch, Ovals, Half Ovals, Half Rounds, Box Iron Cylinder Bars, Plow Beam Iron, &c. Also, Hoop, Band, Horse Shoe and Shafting Iron of superior quality. A full assort meat in store after February 1st.

PIC IRON.

Superior No. 1 Foundry Iron constantly on hand. Bessemer Iron and Special Grades of Foundry Iron made on orders.

RAILROAD IRON.

Thirty Patterns, from 30 to 65 lbs. per yard. Re-rolling done on short Lotice.

RAILROAD SPLICES.

Fish Plates to fit all rails used in the West. Track Bolts made from Iron of superior quality. A large stock on hand. New patterns made promptly.

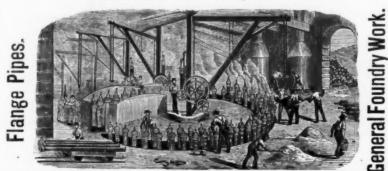
CAR LINKS AND PINS. All patterns kept in store or made to order. Link and Pin Iron in stock.

CAPACITY OF WORKS FOR 1876. Merchant Bar Iron 20,000 tons. Pig Iron 35,000 Railroad Iron 40,000 44 Railroad Splices and Couplings Address all correspondence to

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IRON PIPES

FOR WATER AND GAS.

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Homogeneous Boiler & Fire Box Plates, Plate, Sheet, Pig & Railroad Iron. Wrought Iron Girder, Channel & Deck Beams.

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OFFICE: 812 Race St. WORKS: Twenty-Third & Cherry Sts.,

PHILADELPHIA.

Iron Fronts, Stair Girders, Lintels, Columns, etc

# The American Ice Chisel



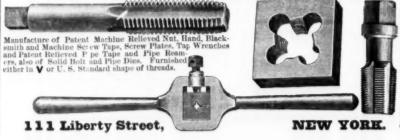
THE HARDWARE TRADE are hereby cautioned against an imitation of our American Ice set, made of Mattleable Iron Castings, which has made its appearance in the market. It is nickel ted and calculated to deceive. Our chusels are made of the best cast steel and warranted.

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## CLEVELAND ROLLING MILL

## Bessemer Steel & Iron Rails & Fastenings,

SPRING STEEL AND WIRE of all kinds. HORSE SHOES, TIRE, AXLES and other Forgings.

Boiler Plate, Galvanized & Black Sheet Iron, Corrugated Roofing & Siding of Siemens-Martin, Bessemer Steel & Iron.

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PROPRIETORS OF THE Pottsville Rolling Mills & Pioneer Furnaces

POTTSVILLE, PENNSYLVANIA. Having introduced New and Improved Machinery into their Rolling Mills, and manufacturing all their from the ore, and also doing all Machine Work and Repairs in their own shops, they are enabled to

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Springfield, Vermont.

PATENT SCYTHE SNATHS AND GRAIN CRADLÉS. R M. GREEN & CO., Agents, 89 Chambers St., N. Y.

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AGENTS FOR THE SALE OF

PIG IRON, Wm. Penn, Norristown and Reading Furnaces. WM. JESSOP & SONS' Cast Steel, &c., &c.

READING NAIL AND IRON CO.'S (Crescent Brand) Nails, Brads and Spikes.

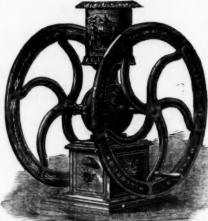
BARROW, SAVERY & CO.'S Tinned, Enameled and Plain Hollow Ware, Medium and CarHollow Ware, Sad, Tailors' and Laundry Irons, Fire Dogs, Wagon Boxes, Savery's Patent Combined ameled Water Cooler and Retrigerator, &c., &c.

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FISHER & NORRIS' Patent American Anvils and Vises.

The Britannia Ironworks Company, Limited, Middlesbro' England,

MANUFACTURERS OF ALL DESCRIPTIONS OF IRON RAILS.

Surplus Stocks of Various Sections always on hand. London Office: W. G. FOSSICK, 6 Laurence Pountney Hill, E. C. Weekly Output, One Thousand Tons.



The annexed cnt shows one of the many styles of Coffee Mills of our manufacture, es-pecially adapted to Grocers' use and all retailers of coffee. They are highly ornamental, and workmarship of the very best. Silver Medal awarded at the Great Fair of American Institute last autumn. We make more than 30 styles. ALSO

Lane's Portable Coffee Roaster Will roast 30 to 40 lbs. at once, and can be n s a stove at other times. Send for descriptive list.

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## **BUERK'S** Watchman's DETECTOR.

Important for all Large Corporations and Manufacturing Concerns.

Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the same caches different stations of his beat. The instrument is complete in itself, portable and as reliable as the est lever watch. It requires no fixture or wires communicating from room to room, as is the case with the relinary watch clocks. A small inexpensive stationary key is alone required at each station. The instrument will, in all cases, be warranted perfect and satisfactory.

\*\*CAUTION.\*\*—The public are notified that in my suit against Imhæuser & Co., of New York, a decree rea made in my favor. June 10. 1874.

CAUTION.—The public are notified that in my suit against Imhæuser & Co., of New York, a decree made in my favor, Jane 10, 1874.

Proceedings have been commenced against said Imhæuser & Co., for selling clocks contrary to the er of the Court, and especially the clock with a series of springs in the cover, and marked "Patented. 20th, 1874." All persons discovered using these infringing clocks will be dealt with according to law.

J. E. BUERK, Proprietor, No. 230 Washington Street, Boston,
In sending for circular or ordering the above, please mention this paper. W. & B. DOUGLAS, MIDDLETOWN, CONN. The Oldest and Most Extensive Manufacturers of PUMPS, HYDRAULIC RAMS, GARDEN ENGINES Yard Hydrants, Street Washers. Hydraulic Machines WORLD. Awarded the GRAND MEDAL of PRO-GRESS at WORLDS' EXPOSITION, VIEN-NA, 1873, being the highest awards on Pumps, &c., also, highest medal at PARIS in 1867. Descriptive Catalogues and Price Lists sent when requested. BRANCH WAREHOUSES, 85 & 87 John Street, N. V. 197 Lake St., CHICAGO, III.

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Pumps, Steam Pumps, Rotary Pumps, Centrifugal Pumps, Piston Pumps, tor Tanners, Paper Mills, Fire Purposes, suitable for all situa-, tions Imaginable.

Also, HAND FIRE ENGINES. Send for Catalogue. Address

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This Butt avoids all of the objectionable features of the Common Reversibles, and offers the following improvements:

PATENTED.

1. It prevents the possibility of the by a three sided plug (A), which, when the hinge ed, fits into the notches (BB). As the working up of the pin is necessarily very gradual, it is pressed back each time the door is

2. Driving out the pin when desired is easily done by merely tapping under the plug at A.

3. It is impossible for the door to be opened from the outside by removing the pins, as this cannot be done when the Butt is closed. This is a valuable feature in the case of doors opening

These goods are sold on the same list and as low as the old style Reversible, and are fast superseding them.

Sample by mail when requested.

Western Butt Co., Sole Manufacturers,

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RHODE ISLAND HORSE SHOE CO., OFFICE, 81 Canal Street, Providence, R. I. (WORKS at Valley Falls, R. I.

> Manufacturers of PERKINS and RHODE ISLAND PATTERNS of

HORSE AND MULE SHOES.

A writer in the Polytechnic Review presents the following interesting facts concerning aluminium, and its future in the arts :

It is now about twenty years since the celebrated French chemist, Deville, succeeded in demonstrating the possibility of producing the metal aluminium upon the large scale; but up to the present, the extent to which this interesting and praiseworthy invention has been uti lized, has but to a slight degree realized the sanguine expectations which intelligent minds of all professions have been accustomed to as ociate with it. So important, indeed, were the fruits of Deville's first investigation deemed to be, that they were at once invested with the dignity of royal patronage, and the first works for the manufacture of the new metal were shortly thereafter erected at Javelle, near Paris, from the private purse of the late Emperor of the French. It was expected that the new product would at once find its way inte the useful arts as an effective and valuable substitute for many other metals. That these expectations were well founded, will be appar ent from the characteristic and very exceptional properties of the metal. A bright, pure urface of aluminium possesses a grayish white color, something between that of zinc and tin, its extreme lightness is one of its very distin ruishing properties, and affords an immediate means of identifying it from every other metal— its specific gravity is but 2.5 (water=1), from which it appears that it is about three times lighter than copper, four times lighter than silver and nearly eight times lighter than gold. When struck, it emits a loud, clear, musical tone, which has been compared with that of crystal glass. The keen observing powers of the French chemist did not permit this property to pass unnoticed. He suggested the em ployment of aluminium for bell metal, and in the year 1868 presented to the Royal Institution of Great Britain a bell a foot and half in diameter, which proved to possess a most exquisite tone, and which, despite its not inconiderable dimensions, weighed no more than 44 ounds.

The metal may be hammered out into the thinnest leaves, rolled into plates or sheets, and drawn into the finest wire. Its bardness approaches that of fine silver, and its tensile etrength equals that of copper. Its melting point lies at 700° C. (about 1300 Fahr.), or be ween that of zinc and silver; and it is worthy of note that it fuses with extreme slowness, and does not vaporize even in the heat of the blast furnace. Generally speaking, the metal is workable to an extraordinary degree, and it may be filed, turned, pressed, engraved and coined quite readily. In compact masses the metal is quite indifferent to atmospheric influences, and even when being smelted, it does not sensibly oxidize. It must be remarked, however, that the properties above enumerated are predicated upon the presumption that the metal is free from impurities.

In the manufacture of jewelry and other articles of luxury, it is probable that aluminium may in time play an important part, though it is scarcely possible for it to ever rival the pop ularity of silver in these uses. In Paris, which, by the way, has always remained the headquarters of the aluminium industry, it appears to be employed to a considerable extent for elegant inlaid work upon jewel and dressing cases, fans, &c., for lids and covers of glasses, and for a variety of small articles of galanterie. From what has been done in this direction, we can estimate its fitness for a thousand elegant articles of taste, fancy and utility, when once its popularity is established before the world at large, which is now scarcely cognizant of the existence of such a metal as aluminium. The clock and watch makers' art, the manufacturers of surgical and musical instruments and of artificial teeth, and especially the manufacturers of fancy articles, such as seals, pen holders. paper weights, smokers' and sportsmen's necessaries, shirt and sleeve buttons, canes and riding whips, harness decorations, statuettes, gas fixtures and lamps, and of other articles too numerous to mention, would, without doubt, derive much advantage and profit from the empin raising in use. This is accomplished ployment of aluminium, and sooner or later its peculiar fitness for these uses will be recog-

> For the manufacture of philosophical and engineering instruments, and especially the latter, the indifference of aluminium to atmospheric influences, and its extreme lightness, have of late met with general recognition, and the employment of the metal for these uses is steadily

For household utensils, likewise, aluminium has been highly recommended; but, though, for this purpose as for others, neither its want of desirable properties nor excessive costliness have stood in the way of its introduction, it has been opposed by the despotic rule of custom or fashion, and in no instance with less show of reason. How much, for example, has been written and spoken concerning the danger of poisoning from the vessels employed in preparing food? How many warnings have been uttered against using copper cooking utensils, pots with lead glazing, and silver spoons that form verdigris? Were these households goods made of aluminum, we should be in possession of vessels that, so far as outward appearance and durability go, leave very little to be desired; that, furthermore, would be far more convenient to handle than the customary wares they would replace; and, what is of perhaps more importance, that would be perfectly innocuous. It appears somewhat curious that the experiment has never been tried of introducing the use of aluminium spoons. The present or prospective cost of aluminium can while the difference in the specific gravity of thus far without practical result. the two metals is so considerable, that for the money value of one sliver spoon of good qual- | manufacture and the present commercial im- ment on.

The Industrial Uses of Aluminium. ity one might obtain no less than seven spoon of aluminium, of equal size and strength.

That prejudice and fashion are to some ex tent to blame for the general want of appreciation (and even of total ignorance) of the eminently fitting characteristics of the new metal for a variety of uses, is very manifest; and the clearing away of such obstacles is generally a matter of great difficulty,

The alloys of aluminium are, however, worthy of special consideration, and there is a reasonable probability that a wide field of utility may be open for them in the future. Dr. Bieder mann, referring to this subject, remarks: "Although there is no mistaking the fact that the high expectations, with which the appearance of aluminium filled the public mind, have not been fulfilled, yet the aluminium industry has a safe guarantee of its existence in the use of the metal for aluminium alloys, which are capable of the most extensive use on account of their excellent qualities." The only aluminium alloys which have, however, acquired importance in the arts, are the so-called aluming um bronzes.

According to M. Morin, the director of the nanufactory at Nanterre, very homogeneous alloys are obtained with copper and 5, 71/2 and 10 per cent. of aluminium. The alloys with 5 and 10 per cent. of aluminium are both of a golden color, while that with 71/2 per cent. has greenish tint. Even so small an addition as 1 per cent. of aluminium to copper, according to nother authority, considerably increases its ductility and fusibility, and imparts to it the property of completely filling the mold, making dense casting free from air bubbles. At the same time the copper becomes more resistant of chemical reagents, increases in hardness without losing in malleability, and unites in itself the most valuable qualities of bronze and brass. A copper alloy with 2 per cent, of aluninium is said to be used in the studio of Christefle, in Paris, for works of art. It works well under the chisel and graver.

The true aluminium bronzes, according to Rudolph Wagner, were first made by John Percy, in 1856. As above referred to, they are alloys containing 90 to 95 per cent. of copper with 10 to 5 per cent. of aluminium. The direct mixture, by first fusion, of 10 parts of duminium and 90 of copper, gives a brittle aloy, which, however, increases in strength and tenacity by several successive fusions. At each operation a little aluminium is lost. After the ompound has been melted three or four times, however, the proportion of aluminium dees not appear to change, and the alloy may be again remelted several times without alteration. These fusions are effected in crucibles. The aluminium bronze is homogeneous, and posesses sufficient expansion to fill the remotest parts of the mold. It affords sharp castings that can be worked more readily than steel. Aluminium bronze may be forged at a dull red heat, and hammered until cooled off without presenting any flaws or cracks. Like copper. it is rendered milder and more ductile by being plunged into cold water when hot. The bronze polishes beautifully, and possesses great strength-according to Anderson's experiments, an average of 75,6181/2 lbs. per square inch. The resistance to compression is feeble. From the experiments of Col. Strange, on the relative rigidity of brass, ordinary and alummum bronze, it appears that the last named is 40 times as rigid as brass, and 3 times as rigid as ordinary bronze.

Other experiments have shown that aluminium bronze does not expand or contract as much as ordinary bronze, or brass; that under the tool it produces long and resisting chips, does not clog the file, engraves nicely, etc.; that it is easily rolled into sheets; that in the melted state it expands very much, and is fit for the sharpest castings; but that, as it cools off rapidly, it is subject to shrinkage, and hence to cracks when the articles are bulky, hence re quiring numerous runners and a heavy feeding head; and lastly, that, although not entirely unoxidizable, it is not so readily tarnished by contact with the air as polished brass, iron, Dr. Biedermann speaks very highly of this metal. "In the construction of physical, geodic and astronomical instruments, he says, "it is far preferable to all other metals. In jewelry and articles of art and luxury it is employed in large quantities Many kinds of house utensils are made of it, and it is also adapted to journal and axle boxes. Gun and pistol barrels, as well as rifled cannon, have been made of it, and have done excellent service." It has been highly recommended for type metal; type made of it lasting, it is affirmed, fully 50 times as long as those from common type metal; it has been employed for the bed of perforating machines for perforating postage stamps; and for the mainsprings of watches (90 copper and 5 aluminium), being very hard and elastic, not magnetic, and less liable to rust than steel. Its price, however, ranging as it does from \$3 to \$10 per lb., according to its percentage of aluminium, is probably the greatest impediment to its com-

mon use. Aluminium alloys with many other metals have been made-notably with silver and iron -but none of them have acquired a permanent with the brief remark that aluminium containing 4 per cent. of silver is employed for the beams of fine balances-for which it is peculiarly fitted from its comparative lightness and stability; and that the addition of a small perwhich, however, has not yet been well established.

In another direction, namely, in electro-plat-

portance of the metal, and we have done. Its netallurgical production is as follows

Aluminium is manufactured by decomposing the double chloride of aluminium and sodium, with the aid of metallic sodium. The sodium (which, by the way, has been materially cheapened in price since the establishment of the aluminium industry) is obtained by heating to eduess a mixture of 100 parts of calcined soda, 15 parts of chalk, and 45 parts of coal. The chloride of aluminium is prepared by passing chlorine gas over a moderately heated mixture of pure alumina (obtained either from alum, or the mineral bauxite), common salt and coal tar. This operation is conducted in an iron gas re tort, and the result of the interaction of the several substances present is the combination of the coal tar with the oxygen of the alumina, and the production of aluminium chloride which unites with the chloride of sodium (common salt), forming a double salt, which volatilizes and is passed off into a separate chamber, where it condenses. From this method of obtaining the chloride, it is impossible to keep it free from chloride of iron, for which reason the Parisian aluminium is invariably impurified therewith. From this double chloride of aluminium and sodium, the metallic aluminium is obtained, either by passing it in the form of vapor over a heated surface of metallic sodium, in a simply constructed and connected system of iron cylinders appropriately heated; or the materials are at once mixed and heated.

Rose, of Berlin, instead of the artificially prepared aluminium chloride, employed the mineral kryolite (a natural compound occurring in deposits of considerable magnitude in Green and, and consisting of fluoride of aluminium and sodium) quite successfully. By heating this mineral with sodium, metallic aluminium and fluoride of sodium are produced, and the latter compound is gotten rid of by treating the resulting mass with caustic lime the metal has also been manufactured from the mineral bauxite.

At present there are four aluminium works in existence, of which three are in France and one in England. Their total production amounts to about 3500 pounds yearly, of which 2000 pounds are produced in France, and 1500 in England. Its market value has averaged about \$15 per pound, and has been for some years stationary at that figure.

Dynamite.-M. L. Roux, in a note on ex. plosives, says: Of the numerous explosive powders put on the market, dynamite alone appears now to be in demand. Dynamite, containing 75 per cent. of nitro-glycerine, should, theoretically, have three-quarters the explosive force of that agent. Practically, its power is about two-thirds that of nitro-glycerine, probably in consequence of the absorption of heat by the silica. 500 kilos, of dynamite are used daily in the St. Gothard tunnel. If the rock is very wet, a German preparation called "cellulose dynamite" is used, which does not part mechanically with its nitro-glycerine so readily as the silica. Its mode of preparation is not known. Three classes of absorbents are used for nitro-glycerine. (1) Natural siliceous material; (2) artificially prepared silica; and (3) some spongy material, to which class the cellulose elongs. Dynamite No. 1 contains 75 per cent. nitro-glycerine; dynamite No. 2 contains a sodic or potassic nitrate powder, with about 40 to 50 per cent. nitro-glycerine; dynamite No 3 contains still less nitro-glycerine and more of some cheap gunpowder. All three are about equal as regards explosive force. According to Nobel, the best No 2 contains an ammonia pow der, and 15 to 20 per cent. of nitro-glycerine, and gives 10 per cent, more explosive power than No 1 dynamite. In using dynamite, onethird less holes and holes one-quarter less in size than with gunpowder are necessary. The saving from its use is about 30 per cent. No 1 burns more readily than Nos. 2 or 3.

The great clock for Memorial Hall, Fairmount Park, Philadelphia, built at Thomaston, Conn., a splendid piece of workmanship. It consists of 1100 pieces, and weighs about six tons. The main wheels measure four feet in diameter. The pendulum ball and rod weigh 700 and 800 pounds, the rod being 141/4 feet long, and connected with the cloc-kwork by what is known as ravity The rod is of steel, and to compensate for contraction and expansion, is encased in two cylinders, one of zinc and one of steel, which, by their relative expansion upward, maintain a uniform center of oscillation. This escapement is different from that used in large clocks heretofore constructed, and some fears were felt about its success, but every part seems to do its work perfectly. The clock stands eight feet high. There will be sixty or more dials connected with it, which will be run by electricity, the hands moving with every beat of the pendulum.

Somebody dropped some mercury on the sidewalk of Reese River City, one day, and an Indian thinking he had found someting valuable, tried to pick it up. First he made a grab at it with his thumb and forefinger, and was astonished when he found he couldn't pick He was determined to have that it up. value in the arts. They may be passed over quicksilver anyhow; so he unwound a handkerchief from his hat, and spreading it on the ground got a chip and scraped the quicksiver into it. A look of triumph shot from his eagle eye as he gathered up the four corners of the handkerchief, but it was replaced by one of centage of aluminium to steel is cialmed to horror and disgust when the metal ran impart special virtues to the latter-a claim through the fabric like water through a sieve. Looking at the metal as it lay on the ground in a puzzled sort of way for a moment, he launched a vicious kick at it, and uttered the scarcely be offered as an objection thereto, for ing and coating other metals with aluminium, ejaculation used by a keno player when some this is now only about one-half that of silver, numerous experiments have been tried, but other fellow makes a keno, he turned on his heel and left the quicksliver for some A few words more concerning the process of other untutored son of the forest to experi-



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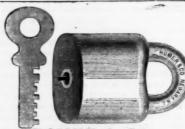
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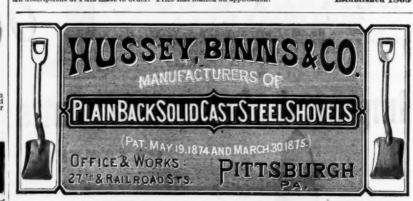
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n this Strap the liability of the leather to stretch and become loose and porous is prevented by the a patented non-extensible base, which supports the leather and secures

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Method of Testing Irons and Steels.

Experimenters have, for a long time past, turned to account the action of acids on iron and steel, in order to ascertain their quality; but this action teaches us something furtherit enables us to draw conclusions as to the egularity of the process of manufacture which as been adopted, and from this point of view

t deserves a wide application. Iron is, as is well-known, attacked by all the ommon acids, and this action takes place in ach of its numerous varieties, as wrought iron, ast Iron and steel; sometimes, however, por ions are found which are scarcely, if at all, attacked by the acid, that is to say, passive, a property which is dispelled by bringing them o a red heat, and which has, beside, no connection with their good quality, since the best wrought irons and the closest grained steels are eted upon by acids.

After several experiments with nitric, suloburic and hydrochloric acids and their compinations, with mordants composed of the salts of copper, &c., Professor Kick, of Prague, has arrived at the conclusion that a mixture of one part of hydrochloric acid with one part of rater, to which is added a trace of solution of chloride of antimony, constitutes a mordant esecially applicable to this purpose. The last gredient, which was recommended to him by Professor Gintl, renders the surface attacked more capable of resisting oxidation, and has the effect, after well washing with hot water nd the application of a cost of protecting varnish composed of Damar resin, of preserving the urface attacked sufficiently pure

The method of proceeding is always to surcound the surfaces, previously prepared by means of a file or hone, with a wall of wax fully three-quarters of an inch high, in the same way that copper plates are prepared for being eaten temperature of 53° to 86° Fahr., 18 poured on to the surfaces, and soon begins to act, as will become manifest by the disengagement of gas. In winter, owing to the low temperature, the operation cannot be performed so favorably. Its duration is usually from one to two hours and it should be continued, as a general rule, until the texture of the iron be exposed. The progress of the action may be easily ascertained by pouring out the acid every half hour without breaking the wax border, removing by neans of a brush or piece of rag the carbon graphite) deposited on the surface, washing and again pouring on more acid if the action

appears insufficient.

If the chloride of antimony has been added to the acid in proportion, but little time will elapse, after the action has commenced, before it will begin to throw down a black precipitate. This is easy to distinguish from the graphite, inasmuch as the latter is not very appreciable, when for about one and three-quarters pints is to acknowledge that these Orientals know a only added a single drop of the concentrated thing or two that is beyond him, and is lost in solution of chloride of autimony, which is sufficient.

When the action of the acid has been contin ued long enough the wax wall is destroyed, and the surface of the iron is washed by means of a brush with several waters, the first of which is rendered slightly alkaline by the addition of a little lye; it is then carefully dried, and a coat of varnish is applied. If at the end of a few hours there are any signs of oxidatiou, the varnish must be dissolved with spirits of turpentine, the oxide removed, and the varnish again applied.

The following are the indications given by

the different kinds of iron:
Soft or Fibrous Iron.—When of very good quality this iron is attacked by the acid, even when the action is continued for several hours, in a manner so uniform, and with an elimination of the carbon so limited, that the surface acted upon retains a dull luster, a few incised specks nd cinder-like holes being only observable.

Fine Grained Iron gives exactly the same indications; the surface generally remains uni-

form, but it is not quite so bright.

Coarse Grained Iron and Hot-Short Iron are attacked by the acid with much greater energy the end of about 10 minutes, the surface, especially that of the latter kind, becomes quite half an hour, a black muddy deposit (schlamm) attacked more deeply in this way; others, al fine tile be passed over the surface.

Malleable Iron or Annealed Iron becomes rusty, iron; but an interesting fact is that the action of the acid is very violent and irregular.

little apparent.

these steels are uniformly gray, the non-sults can undoubtedly be achieved, although homogeneous parts are rare, and but little we are very much afraid that it will be a good many years before we shall see American carpenent. The softer the steel, the more apparent. The softer the steel, the more appending to gray is the color. The action of proaching to gray is the color. The action of

sents a tolerably uniform dark gray color. spotted cast fron the white portions remain lighter, and the projecting particles of gray cast fron appear distinctly like black specks or spots.

The cases enumerated above will show the indications given by the principal classes of iron when treated with acid, and, therefore the phenomena afforded by pieces composed of different kinds of iron will speak for them

Professor Kick has given many examples of the appearances presented by the combination of different kinds of iron, and adds: " When in the forging of any piece different qualities of fron are united, the acid, when applied to the prepared surface, chiefly attacks the quality for which it has the most affinity, and to such an extent that its mordaut action on the other portions is much less active than if these portions were exposed alone or singly to the action of the acid. Bessemer steel alone sub mitted to this action presents a gray surface, but if it is welded to a coarse grained iron it is attacked in a less degree.

As to the results of the action of the acid in relation to the method of working iron, the foregoing remarks show that some light has already been thrown on the choice of different qualities of iron in the arrangement of the piles; they also point out that, even with the most simple piling, there is always a considerable crushing of the bands. It is, nevertheless, possible to draw from the appearance of the surface acted upon by the acid a conclusion as to the position of the bands or bars occupied in the pile. The more uniform is, or may be, the distribution of the pressure in the pile, the less will individual bands become disarranged. The Professor has come to the conclusion that the best method of forming the piles is that in which the welding is so perfect as to furnish in with acidin engraving; the acid, heated to the most satisfactory indications when submitted to the acid test.

In conclusion, Professor Kick admits that the samples on which he conducted his experiments were obtained from only one establishment, and that they were too few to admit of general conclusions being drawn from them. He be-lieves, however, that he has conclusively pointed out the importance of this method of testing frons, as well for the manufacturer as for the consumer.

#### Japanese Workmen.

The remarkable skill and dexterity of the Japanese workmen employed to erect the Japanese buildings on the Centennial grounds excited the admiration of all who saw them at work. The Philadelphia Telegram says on this subject:

Many an American workman who flatters

himself that he is skilled in his trade, is forced

wonder at the neatness, readiness and thoroughness of their operations. Now, how did these Japanese manage to acquire such a mastery of their trade as they certainly have acquired? Most of the nicest and most delicate work executed by them is measured with the eye, and the rule is not used in innumerable instances where an American mechanic of the first rank would consider it absolutely indispensable for the accomplishment of even an approximately good job. Their fitting, however, is a marvel of exactness in every instance, while their knowledge of certain principles of construction appears to be absolutely exhaustive. We do not believe that the skill shown by these men is due to any superior natural apt ness, and we are quite convinced that, no matter what their natural aptness may be, they would never have been anything but bunglers had they not been trained for their business with a thoroughness of which we know nothing on this continent. What the Japanese system for the education of workmen may be like we have no idea, but it is certain that it gives a training for eye and hand which no system that has ever been in vogue hereabouts has ever We do not believe, however, that there than the two kinds above mentioned. Even at is any particular merit in the course of instruction given to Japanese mechanics, or that we cannot accomplish equal results with methods black. If the acid be allowed to act for nearly of training with which we are familiar. The secret of the whole business is that in Japan a may be removed by washing, and no amount of tradesman is compelled to really learn his trade, washing will prevent the surface from remain- and is not permitted to only half learn it. He ing black; there will also be a considerable is compelled to place reliance upon the instrunumber of small holes distributed over the surments which nature has furnished him-his face. Some portions of the iron are generally eyes and his hands-until he has them so educated that he is able to calculate upon them though they may have become black and a little serving him with the best effect under all cirporous, are better preserved. This appearance cumstances. Before our mechanics can hope will be the more manifest if, after about an todo work like that now being done by the hour's action, repeated washings and drying, a Japanese at the Centennial grounds, it will be necessary for them to have eyes that can see straight and hands that will instinctively follow as is well known, more readily than wrought the guidance of the eyes. The importance of securing for the rising generation of workmen such education as will render them skilled la-Puddled Steel .- The color, after being treated borers in what seems to be the Japanese sense with acid and washing, is gray, and of a toler- of the term, admits of no question. How it is ably uniform shade, the weldings being but to be secured to them, except by some thoroughly scientific system of technical education Blister Steel .- The appearance exhibited is which will commence with the smallest children very like that of puddled steel, and the weld- in the primary schools, we do not know. With ings are also but slightly apparent.

Bessemer Steel, Cast Steel.—The surfaces of to put such a one in operation—excellent resome such system-and it is far from impossible

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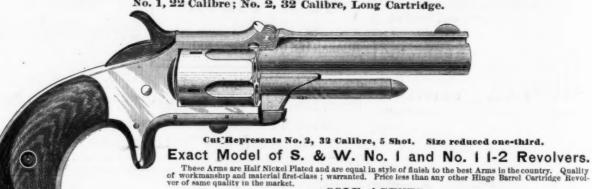


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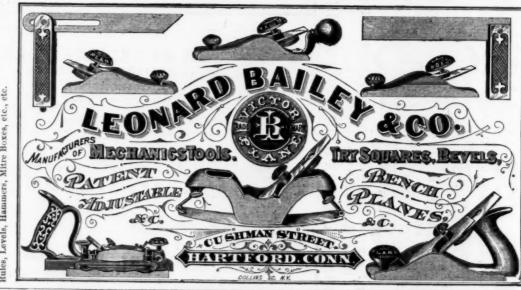
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Office of THE NEW YORK KNIFE CO., WALKILL RIVER WORKS, WALDEN, ORANGE CO., N. Y., Mar. 17th, 1876.

#### NOTICE TO THE TRADE.

We have this day withdrawn the Agency of our TABLE AND FOCK ET CUTLERY from ROWE, BABCOCK & POST, of No. 120 Chambers Street, New York, and placed our goods with THE WIEBUSCH & HILGER HARDWARE CO., of Nos. 84 and 86 Chambers Street, New York, who will act as our Agents, where a full line of our samp es and goods may be seen.

We would caution our customers against buying goods stamped "NEW YORK CUTLERY CO.," sold as Cutlery manufactured by THE NEW YORK KNIFE CO., Walden, Orange Co., N. Y.

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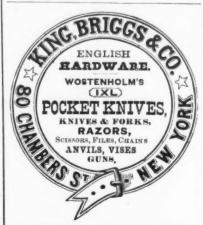
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#### BUSINESS ITEMS.

#### MASSACHUSETTS.

The Hinkley Locomotive Works, last Saturday week, delivered to the Boston and Lowell Railroad Company a first-class locomotive, the Manager," weighing 33 tons, 17 by 24 cylinder. The same works are building another of the same class, for the same road, to be delivered in June next.

The Richmond Furnace, of the Richmond Iron Company, has been closed, but they will run the one at Van Dusenville, probably, till next spring, working at stock on hand.

#### RHODE ISLAND. The Commercial Bulletin says the new fur-

nace of the Warwick Iron Company went into blast week before last. CONNECTICUT.

#### The Connecticut Screw Company, Tariffville, has now begun manufacturing screws for the market, although not yet to its full capacity. The company manufacture "wood screws."

NEW YORK. At Troy, Corning's are running a few furaces in the steam mill and star forge. They have been running two-third time double turn. Burden's lower mill has about sixteen furnaces on double. Burden's upper and the Renssalaer are working.

At Rome the puddle mill is shut down. Unertain about start. The rail mill is pushing

The mill at Syracuse is running. Good prospects. The "Lodi" is getting a new company,

and will start. Elmira, running pretty steady. Stopped 29th. Rail mill steady.

At Buffalo, Black Rock running steady, with good prospects. Uniontown run three weeks and shut down. The mill at Cohoes was stopped at last ac-

#### PENNSYLVANIA.

counts.

Moret & Keim, iron manufacturers at Knauerown, Chester county, who had made partial arrangements for the removal of their works to Douglassville, now propose to go to Monocacy station, three-fourths of a mile further up the railroad, ground having been offered them at that point gratuitously, while at Douglassyille a charge of \$2500 is made for a smaller piece of

Work is quite brisk just now with the Phœnix Iron Company, at Phænixville, all running but their furnaces, they being able to purchase pig iron cheaper than they can produce it.

There is some little difficulty about the Rolling Mill at Scottdale in regard to wages, It will doubtless be adjusted, as Everson & Co. and the employes are all reasonable men. They will not let any unnecessary disagreement on either side loterfere to cause a mutual injury.

It is currently reported, and generally be ieved, that the nail mill at Scottdale is going to be a reality, notwithstanding some rumors to the contrary. It is hinted that a few days will develop something very gratifying.

#### PITTSBURGH AND VICINITY.

A day or two since the boys employed at the bottle houses of McKec & Co. and A. & D. H. Chambers went out on a strike for an increase of wages, and yesterday morning the boys in Cunningham & Ihmsen's followed suit. The trouble is occasioned by a demand on the part of the boys for the same wages as those received by the boys in the flint houses. The places of the strikers were promptly filled, and the work goes on without Interruption

The Natural Gas Company (limited), which supplies Spang, Chalfaut & Co.'s and Graff, Bennett & Co.'s mills with gas from the But ler county wells, have struck gas in their new well, a half mile this side of the old well, at Lar din's mill, in Clinton township, that county, which promises to be as good as the one now in

Roebling, the bridge builder, has made some very satisfactory tests with No. 10 wire made from Edgar Thomson Bessemer steel, for ase in bridge building.

SHENANGO VALLEY.

Five of the new furnaces at Sharpsville are in

MARYLAND,

The puddle mill at Cumberland is on twothirds time. Half time in the rail and top and bottom and bar mills.

#### WEST VIRGINIA.

nial.

The Benwood Nail Works have leased the Ohio City Iron and Nail Co.'s Works at Marlins Ferry, and are now operating them.

Randolph county has sent a block of bituminous coal, twenty feet in length, to the Centen

The hugh flying wheel of the engine running part of the nail machines at the La Belle Works' Wheel, broke on Wednesday last. The pieces flew like balls from a cannon, but luckily no one was hurt. A large piece of the wheel was thrown over 100 feet, and came within a hair breadth of taking in several persons in its course. The band which propelled the wheel was thrown off by the engineer, when the wheel stopped, and no further damage was done. This accident will require the stoppage of about half of the machines for three or four weeks, but the rest of the mill will run as usual.

The Whitaker Iron Works, Wheeling, the old Crescent mill, are putting in a new twenty-inch train of sheet rolls for cold rolling. These M. Sechler is now in this city. We learn that having been idle for years. These rolls will And the cry is still they come. take the place of the old top and bottom mill. Garrison, of Pittsburgh, is making them.

The Riverside Iron Works, Wheeling, are putting in two more puddling furnaces, making a total of 26. With 24 furnaces there were made last week 321 tons of 2240 pounds, an scale, made in April and good for one year

average of nearly 21/4 tons per day.

Several furnaces in and near Wheeling have made arrangements to test Virginia ores on a arge scale, sufficient to make the test of value

We have already mentioned the sale of the Clifton Iron and Nail Works to W. H. Rathburn, H. H. Swallow and Geo. E. Downing for about \$68,000. That is to say, the indebtedness of the concern amounted to about that sum, which the parties named assumed, and take the property, both real and personal. The amount paid for the realty is understood to be about \$40,000, which is only about one fourth the original cost. We understand the new company propose to allow all of the old stockholders, who desire to do so, to reclaim their stock on payment of 25 per cent. of the original amount, which would be about their quota of the indebtedness of the concern at the time of the sale. It is understood that the new company intend putting the works into immediate operation again, adding 20 new nail machines as soon as they can be had, thus increasing their productive capacity about 50 per cens.

#### онго. There is some prospect of the Mouitor

Furnace blowing in soon. The Cuyahoga Works are building a new cylinder for the blowing engine of the Cleveland Rolling Mill Company, and have just completed the steel boilers for the Otis Iron and

Steel Company.

The furnace of the Cleveland Iron Company, which has been relined and pretty thoroughly overhauled, is completed, and is now being dried out. It will be put into blast in the

ourse of the next two weeks. The product of the Standard Iron Company's mill, Cleveland, is being disposed of as rapidly as made. The coal-hod department was started up this week, the last of the stock having been

shipped to fill an order last week. The Steubenville Furnace will soon blow out. It has been in blast nearly four years. At present it is using a large portion of cinder. This, though an iron jacketed stack, rests on brick pillars instead of iron columns, as is the case with most stacks of this kind. The furnace is blown by two vertical direct acting engines through five 6 inch tuyeres, making 35 to 40 tons per day.

The new blast furnace at Gore, in Hocking ounty, will cost about \$40,000, and use native coal and ore.

The Marietta Rolling Mill was sold the other day for \$30,000, the purchaser being Mr. Wm. Lottimer, mortgagee.

The Ironton Register says there is some talk of the rolling mill and nail mill stopping 60

J. H. Fisher & Co. have contracted with the Burgess Steel and Iron Works, Portsmouth, for erucible iron (homogeneous steel) of 70,000 lbs. tensile strength with which to make a large tubular fire box boiler for Capt. Bay's new

Alice stack, of the Ætna Iron Works, Ironton, is doing well, making about 50 tons daily, on about one-half coke. The Lawrence Furnace, near Ironton, is run-

ning on half coke and half raw coal and doing There are two furnaces projected in the

bell & Sons, the other by the Sheridan Iron and Coal Company. It is stated that the Iron and Steel Co.'s extension was for five years. The mill has

Hanging Rock iron district, one by H. Camp-

resumed with ten furnaces. The mill at Newark bas been idle. It proposes to run long enough to work up some

stock, and stop for better prices. The Cherry Valley Mill, at Leetonia, has got its bar mill in place, and is doing work.

#### MAHONING VALLEY.

Cartwright, McCurdy & Co. are running single turn in both mills. The Youngstown mill is doing quite well

ow, running double turn. Brown, Bonnell & Co.'s Works are running double turn throughout.

The outlook in Smoky Hollow is still very discouraging. The Valley Mill, Nick Ridgeway & Co. and Turners Spike Works remain as silent as the grave.—Register and Tribune.

The bursting of a tuyere at one of the Himrod furnaces, on Friday night, caused the residents thereabouts to think that a young earthquake had struck that locality. The Hubbard Vindicator sava: Hubbard

Furnace No. 1 started up full blast the latter part of the past week. The old fillers were discharged and their places filled with new men.

#### ILLINOIS.

The Grand Tower Furnace Company blew their furnace out last week; the stoppage is without any definite prospect of resumption of business until a radical change in the iron trade of the country takes place. This leaves no furnace in in Southern Illinois, the Big Muddy and the one at Elizabethtown being out. We also believe that there is but one furnace in in

The new foundry of Dyer, Lamb & Co., South Chicago, put in its "first heat" last week, and is now in full operation, with work enough awaiting to keep it running to its utmost eapacity.

#### MISSOURI.

The Irondale Furnace has, or is about to be, blown out, we learn. It will remain out of blast until a change takes place that will justify the production of the Irondale's grade of metal. TENNESSEE.

The Chattanooga Commercial says: Col. D. works are now making only sheet, the rail mill he desires to bring his rolling mill to this place.

#### KENTUCKY The Hunnewell Furnace is making about

eighteen tons a day. WISCONSIN The mill at Milwaukee is working on a yearly

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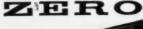
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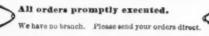
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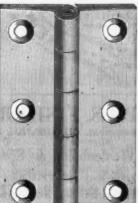
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Canada				*******	
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Great Britain .		*******	3 04	******	
France	6 08		3 04	*****	1 5
Germany			3 04	******	1 5
Buenos Ayres			4 08	*******	
Peru	8 16	******	4 08	******	
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Mexico	8 16		4 08	******	2.0
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New Zealand.			2 52	*******	1 2
Brazil	8 16	*******	4 08	*******	20

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#### CONTENTS.

First Page.—The Lucy Furnace, Pittsburgh, Pa The Mississippi Jetties.

Third Page. - A New Mediterranean Fifth Page .- New Patents.

Seventh Page.—The Industrial Uses of Aluminium. Dynamite. Ninth Page.—Method of Testing Irons and Steels, Japanese Workmen.

Eleventh Page.—Business Items.

Fourteenth Page.—The Centennial Exhibition he Work of the Iron and Steel Tests Commission oing Business on Business Principles. The Bank

Fifteenth Page—Our Business Relations with Spanish America. The United States Government Display at the Centennial Exhibition. Plows and Cultivators at the Centennial. Sixteenth Page.—The Progress of the Coa Trade. Electro-Bronzing Important Decision Af-fecting the Title to the Republic Mine.

Seventeenth Page.—Centennial Notes. Ser Worms. Philadelphia Correspondence. A New London Underground Railway.

Nineteenth Page.—The Lynchburg Iron Works. Blowing in the Keystone Furnace. Twentieth Page.—A New Process for Making Rails for Narrow Gange Railroad. How Fires are Made. Paper Ware. American Society of Civil

Twenty-first Page.-Trade Report. Twenty-second Page.-Trade Report.-Cornued.

Twenty-third Page.—Trade Report.—cluded. Our English Letter. New Coal Dements. The Hubbard Steel Works. America can Ex-

Twenty-fourth Page,—American Exports,-Concluded). A New Antimony Pigment. Leste (Concluded). Oil Company.

Thirtieth Page.—New York Wholesale Prices of Hardware and Metals.

Thirty-first Page. - New York Wholesale Price Thirty-fifth Page.—Philadelphia, Buffalo, Ci unati, Pittsburgh and Detroit ilardware and Met

Thirty-seventh Page.—Chicago, Boston, St. Louis Hardware and Metal Prices.

#### The Centennial Exhibition.

Now that the excitement of opening day is over and we have time to consider the Centennial Exhibition on its merits, we find in it much to warrant a feeling of in the proportions of carbon, silica, mangratification and pride. For all delays and empty spaces, exhibitors are themselves re- exhaustively investigated. The committee sponsible, and it would have been well had der of the Commission declaring all space of the opening. Had there been such a to accurately simulate the conditions of ments of visitors. The few who had oppor- ments which may be necessary to fill gaps termining tensile strength. The two gen-

exhibitions, and when fairly and impartially compared with those which have preceded it, the conclusion must be that it is the greatest exhibition the world has ever

But while a success as an exhibition of the world's industries and arts, it is likely in some respects to prove a failure. From present appearances, it is safe to conclude that it will not nearly repay the immense outlay involved. We have never supposed that it would, and have steadily discouraged the efforts to secure subscriptions on the strength of assurances that Centennial stock was a good investment. The Paris Exposition did not pay, nor did that at Vienna; and were ours likely to do so under favorable conditions, the policy of the commissioners in refusing to open the grounds on Sundays would cut off a large ncome which cannot under any circum stances be spared. We will not venture to discuss the Sunday opening question on if the Exhibition is not opened on Sundays, there will be an enormous deficit to report at the close. Probably there will be in any case.

The management of the Exhibition of newspaper correspondents, which have been copied and circulated throughout the country, seem to rest upon a very slender foundation. Our own experiences lead us to believe that the visitor is free from all at moderate prices elsewhere than at the Trois Freres, and that he need not suffer from imposition or extortion of any kind inside the Exbibition grounds. There is some complaint of a disposition on the part of the people of Philadelphia to take undue advantage of the public, but if this is true no one connected with the Exhibition is responsible for it.

A comparison of American and foreign exhibits cannot but be gratifying to every friend of American industry. In no department do our exhibits suffer by comparison with those of a similar kind from other countries, and in some we are obviously a long distance ahead of competing nations. Whether we shall gain from this much advantage in an increased foreign demand for our manufactures, remains to be seen. It does not seem probable that we shall have as many foreign exhibitors as was expected, but the number of arrivals will probably steadily increase as the season advances. Finally, as an advertising medium, the Centennial is likely to prove a great disappointment to a great many people. Many costly and beautiful exhibits are so lost in the wilderness of more curious and attractive objects, that they will receive but little attention, and many large hopes of reputation and profit which exhibitors have formed while engaged in the work of preparation, will sadly disappointed. The incidental benefits of the exhibition will be great, but we think that few individual exhibitors in the trades we address will reap much immediate profit from their investments.

Regarded as a whole, our exhibition is a gratifying success as an exhibition, and if to prove that this is not so, the manager it should prove financially unprofitable, it will have accomplished good enough to compensate for any deficit which may exist at the close. This generation will not have to pay for another.

#### The Work of the Iron and Steel Tests Commission.

The work which the United States Com mission, appointed to test iron and steel, has undertaken is exceedingly important, and practically consists of the thorough exploration of the field assigned to them.

One of the first, and perhaps most important, things undertaken is the determination of the physical properties of steels and irons of which the chemical composi ion is known. A series of steels of a wide variety of composition is in preparation, with a view of ascertaining the resistance and physical properties and alterations of those qualities produced by the variation ganese, etc. This whole subject is to be on abrasion and wear are collecting much terest. It is to be hoped that the further

and Vienna, can find points of difference | Committees on corrosion and temperature, enough to enable them to draw compari- as effecting metals, are at work, and valusons unfavorable to our own; but it has able results are expected. The committee also points of superiority over all previous on girders and columns has a plan of operations which includes elaborate investigations of the strength of materials in lengths up to thirty-five feet. Some years | The counters, furniture and fixtures were columns and girders of various forms and proportions. These are the most formidable long steel bolts, from four to six inches in worth, probably, half a million dollars, and expensive of the researches to be undertaken by the Board, and the power and strength was far less than was expected; We forget how many days he continued in accuracy of the 400 tons testing machine will be fully taxed in this work. The that, in masses, metals do not show anything investigation was made it was found that committee is receiving the co-operation and active aid of some of the largest man- small sections, yet just what the loss of not much exceeding one hundred and fifty ufacturers of beams and girders in the country. The results of experiments allited means of ascertaining. The general in the store had been obtained by misrepready made have been communicated to the committee by the engineers of rail- is one of the subjects of which we know Even so careful a merchant as A. T. roads and of mills, and in other cases important and costly experiments have been far beyond the resources of any private creditors, and it is said his favor was won undertaken by private incorporated companies, and the Board has been invited to be ment or not at all. present and to assist in the work if it should seem desirable. The results are to ers and the public may understand the the specious adventurer had managed to be given to the Board, such sizes and proportions as the Board may desire to test are which will result from it, and why it should houses, and when they gave him credit he to be made, and all necessary labor furmoral grounds, but it is quite certain that, nished without any expense to the government. Bridge builders, civil and mechanical engineers and architects are corresponding with the Board on this subject, and in every direction there is the most hearty co-operation on the part of individuals. seems to be good. Many of the criticisms The committees on cast iron, malleable exceedingly small in comparison with the but has extended to all trades. The extent iron and malleable alloys are all doing valuable work in gathering information the money will be well expended there shaky basis is shown by the great number and making experiments of a character to render the knowledge we already possess more practically valuable. In the testing annoyances, that he can procure his meals of alloys] the autographic torsion testing machine of Professor Thurston is used, as well as direct tensile strain machines The number of experiments performed in this department is exceedingly large. In most instances the variety of data obtained in connection with any given alloy has included not only tensile strength and elasticity, but torsional resistance, chemical analysis, photographing ends of samples, and a number of other facts, all preciate, and which will have for him a of which are accurately recorded in such form as to be practically of value. These tests have been made in the mechanical laboratory of Stevens Institute, and it would seem that nothing had escaped record or observation that could, by any possibility,

prove of value hereafter. There are several other committees whose attention is given to various important subjects in this connection. One of on the quality of steel used depends, to a manufacturers have had little or no information upon this subject, save what they have gained by actual and costly experience. In a large proportion of iron working establishments the whims of the blacksmith determine what brands of steel shall be used for tools, rather than what kind of steel is best adapted for the work in hand. Now and then an establishment makes experiments, and finds to its sorrow that their representations would have been a new brand "does not work well." upon." In other words, the steel does not please the blacksmith. As there is nothing returns to the old brand, glad to let he might choose to ask for. No one needs "well enough" alone. Definite tests of to be told that business of this kind is not the values of different kinds of steel for done upon sound business principles, and all sorts of tools will be of the highest posto these tests, we know what the composishop.

In one department the work of the Commission will be of almost incalculable benefit, and that is testing of the tensile strength of metal in large masses. For this purpose a testing machine, capable of exerting a strain of 800,000 pounds, is being constructed, for the board, at Chicopee, Mass., by Mr. A. H. Emory. The machine is one of great accuracy, it being intended to indicate the pressure applied to single pounds when the whole pressure amounts to 800,000 pounds—a wonderful degree of accuracy. Mr. Chas. E. Emery, of this city, designed an attachment to be applied to the straining end of this press, which should be a check upon the results greater promptness been insured by an or- information that will be of the greatest in- obtained at the weighing end. This attachment also gives an autographic diaforfeit which was not occupied on the day experiments made will be of a character gram of the strain. This makes the machine of double value, insuring accutime. As it is, however, the day of open- plate is busily engaged in collecting data most valuable record of a mechanical test, ing found the Exhibition surprisingly and information upon this subject. A the autographic strain diagram. The complete, and since then much work has committee on chains and wire rope is character of a metal can often be as ac-That it surpasses public expectation will be lecting and arranging this data for the pounds per square inch, as proved by actual evident to any one who listens to the com- Board, which will undertake any experi- breaking in the ordinary apparatus for de-

related to each other, but their combined of the business of the time has been done work is likely to result in giving us the A young man, who had failed in a Westbest testing machine we have ever had. If ern city, came here to make a bold venture. we are correctly informed, the apparatus He leased a fine building in Union Square described is capable of testing metals in and had it fitted up without regard to cost. ago, when it was necessary to test several elegant. Into this he put a stock diameter, it was found that their tensile and while it is a generally accepted fact business, but it was not long, and when an like the tensile strength they possess in the enterprising proprietor had a capital strength is we have, at present, very lim- dollars cash, and that everything he had behavior of metals in masses under strain but little. To investigate the subject is Stewart was found among the principal individual; it must be done by the govern-

We have given these facts that our readwork of the Commission, the benefits gain the confidence of a few of our leading be regarded with favor by all who are in- had no trouble in getting it to any extent terested in securing accurate knowledge from the small concerns. This may be on these subject. The question whether the government shall make the appropria- haps, but there have been thousands so tion necessary to carry on this work is now under consideration in Congress. The typical case. The demoralization has not amount asked for is but \$50,000, a sum magnificent results to be obtained. That to which business has been done on a is no reason to doubt. Opportunity for a of failures reported since the panic and to be a very grave doubt whether the In both respects the annual average has appropriation can be obtained. While it is eminently desirable that economy should mercial history. Whether, as a people, be practiced in every department of the government service, it does seem to be the hight of folly to withhold an appropriation for this purpose, when the results will have such a direct money value to the manufacturers and workmen of the country. The returns will be immediate and practical, of a character that every mechanic can ap practical value.

#### Doing Business on Business Principles.

In the new era of business prosperity upon which we shall enter when the long expected industrial and commercial revival shall have come, it is important for all who are engaged in active commercial pursuits to remember that, while the methods the most important of these is the one in of business are constantly changing, the charge of tool steels. While tools are of foundation principles of trade, which some vital importance to all metal workers, and writers have called its "natural laws," never change. During the past twenty great degree, the usefulness of a tool, years a great deal of business of one kind that it does not pay to produce what must or another has been done upon principles very different from those which governed successful transactions in old times. Men have gone into trade without capital, without reputation and, in too many instances, without much of anything to base a reputation upon. In old times such men would have found it difficult to obtain anything beyond a very limited credit, and closely scrutinized. Not so during much "is not uniform," or "cannot be depended of the past ten years. The anxiety of manufacturers and jobbersto sell goods and get customers has been so great, that almost any one could get about as much credit as that the risks are altogether disproportionsible importance; and when, in addition ate to the profits, even when everything goes well. All over the country we have 50 cents on the dollar when the day of settlement came. These fungoid growths are the legitimate product of a loose business

continuous and thorough. can usually manage to save from the ruins vent debtor offers and give him a release. more; if he succeeds, the profits of a large proceedings were in progress, added to the business will sooner set him firmly on his rule everything would have been ready in actual practice. A committee on armor racy, and at the same time giving us that feet than those of a small business. When it more profitable to take 35 or 40 per cent. profits are large, a business of this kind, proceedings in bankruptcy. if well managed, can usually be carried been done which has told to good advan- working up the data which for a long curately determined from an examination of along without serious difficulty, but when gether too many opportunities for fraud. tage. At present no one is likely to be time have been collecting in the navy de- one of these diagrams, without any knowl- misfortune in any shape overtakes it, the It requires the bankrupt to show assets to disappointed who visits the Exhibition, partment. Commodore Beardslee is coledge of what the strains amounted to in end has come and the creditors can hold a the amount of at least thirty-five per cent. meeting.

this city which illustrates in a striking assignee can usually make up the re-

and his opening was the talk of the town. resentation and remarkably clever deceit. by the present of a fine horse-bought on credit-which very perfectly matched one he already had. In one way or another considered an exceptional instance, pernearly like it that it may be regarded as a been limited to any one branch of business, "job" there is none, and yet there seems the enormous aggregate of the liabilities. been greater than at any time in our comwe have learned anything from experience remains to be seen.

The root of the trouble is the great haste to be rich. We do not need to do the business as our fathers did until, like them. we get our mails weekly and handle mer chandise one case to the invoice. Wealth comes easier to a generation which has drawn all the vast and imponderable couriers of nature into its service, than to one which knew nothing of these mighty agencies of progress, but when we depart from old time business principles and try to build a great superstructure on slender and narrow foundation, we find that the way of our fathers was better than

There are indications of a desire on the part of a majority of those who have survived the panic and its effects, to return to a safer business policy, which is full of promise for the future. Manufacturers have learned be kept or sold at a loss; merchants are finding out that a small business with sure profit is better than a large business without profit, and there is a general disposition to look closely into the affairs of those who ask for credits or offer to compromise their debts. If the bitter lessons of experience shall lead us to abandon our loose and unbusiness-like methods of doing business, we shall soon find ourselves in the enjoyment of a larger and more substantial prosperity than we have had at any time since 1860.

#### The Bankrupt Law.

The defects in the bankrupt law are so many and serious as to cause great dissatisfaction among the very class of business men whose interests it was designed to protect. It is so much better than no nations of the best steels are, how they are seen the growth, expansion and collapse tional law that few would consent to its made and to what is due their superiority, of mushroom concerns which for years repeal, but its value is so small in its presit will be possible to effect a very great had done a large business on very slender ent shape that, in the opinion of many, it economy in this department of the work- foundations, but which were unable to pay could be best reformed by repealing it and passing a new law. Probably the desired changes could be made without difficulty, however, if Congress could be system. When credits were carefully brought to consider the subject calmly and scrutinized and prudent merchants de- intelligently from a business standpoint. clined selling on any other terms than cash | One of the chief objections to the to those whose credentials were not the existing law is the great expense it very best, the "weeding out" process was entails upon those who seek to avail themselves of its provisions in re-Easy credits are a constant temptation covering from delinquent debtors. It is to those to whom they are extended to not unusual for those who cannot or will take undue advantage of the misplaced not pay their debts, to force the acceptance confidence reposed in them. The man who of a settlement on their own terms by has everything to make and little or threatening to go into bankruptcy. Were nothing to risk, is constantly tempted to this threat carried out, the bankrupts' as-"launch out" and extend his operations far sets would shrink to such an extent that it beyond the limits of safety. If he fails he is usually cheaper to take what the insolas much as he started with, and often The loss of interest during the time the cost of the litigation, would usually make everything is active and prosperous, and at once than to recover 50 per cent. by

Again, the bankrupt law affords altoof his liabilities, but the nature and value We know of one instance occurring in of these assets are not prescribed, and the tunities of visiting the exposition at Paris or supply further needed information. themen to whom we referred are in no way degree the reckless manner in which much quired percentage by counting in what ever he may choose to inventory at pretty | turers are anxious to extend relations and stated that this first venture was at the instigamuch his own valuation. The fact that be content with moderate profits, they, at such frauds are so generally practiced the same time, will vigorously discrimas to give rise to complaint among all inate between countries in an arnachical classes of business men, is an unwelcome state, and those not likely to be disturbed indication of a low standard of business by a causeless revolution. Credit should morality; but we must accept the facts as in the future be given only to such cuswe find them, and make better provision against fraud than is now afforded to creditors.

The great trouble with the present law seems to be that it makes a discharge in bankruptcy altogether too easy for the bankrupt. When a man tenders less than fifty per cent. in settlement of his liabililies, it is evident that he has not dealt honestly with those who have trusted him. He may not have intended to defraud his creditors, but if he has pursued a policy of business management so reckless as to reduce his available assets below an amount equal to onehalf his liabilities, he should be required to give a clear and satisfactory explanation of his affairs. Failing in this, he should, we think, be counted as a fraudulent bankrupt, and held to account accordingly. The subject is one which should receive the attention of Congress without unnecessary delay. Before any changes are made, our leading business men should be called upon to give their views and experiences, and if Congress is guided thereby in amending the law, it will not be apt to make any mistakes.

#### America.

During the past twelve months our trade with the Spanish-American republics has been much hampered by a series of revolutions affecting nearly every one of those states. These political disturbances re peat themselves with almost periodical regularity in most of them, and are mainly due to the individual ambition of certain military chieftains or of lawyers, who endeavor to forcibly oust from power the legally or illegally installed chief officers of the government.

A glance at our trade with Spain, Portugal, Brazil and Spanish America during the past fiscal year will enable us to form some idea of the comparative importance of our commercial intercourse with the latter, and show that we are deeply interested in their undisturbed prosperity.

Our Trade with Spain and Her Colonies from

June ?	30, 1874, to .	June 30, 1875.	
		—Ex	port-
Spain		goods. \$7,540,086 15,886,658 2,377,757	Foreign goods. \$27,290 6,874,351 108,963
Spanish Posses- sions in Africa. Ditto, elsewhere.	133,451	89,686 89,889	3,248
Total	\$85,174,120	\$25,684,076 \$	\$6,513,847 117,872,048

Our Trade with Portugal, Brazil and the Spanish-

A	mericun he		port-
	Import.	Domestic goods.	Foreign goods.
Argentine Repub-		\$1.301,294	\$138.324
Brazil	42,033,046	7,634,865	110,494
Central America	2,627,359	1,042,784	139,150
Chill	789,242	2,062,190	12,776
Mexico	11,634,983	3,895,792	1,874,991
Peru	1,344,595	2,413,657	37,284
Portugal	480,362	298,388	2,804
Portuguese Colo-	- 20 200		
nies	159,993	298,388	2,304
Saint Domingo	341,216	479,425	28,652
Colombia	12,942,365	4,272,950	226,349
Uruguay	2,935,039	1,440,665	68,273
Venezuela	5,690,224	2,423,254	56,075
Other Spanish- American places	179,226	12,563	
	\$86,992,350	\$27,606,215	\$2,697,476
Total	*** . * * * * * * * * * * * * * * * * *		117,296,041

From these figures it will be seen that the business we have transacted with Spain and her colonies even slightly exceeded our trade with Portugal, Brazil and the Spanish-American Republics, and that, taken together, we have exchanged products to the amount of \$234,668,084.

At the Centennial most of these nation are represented by their own exhibits. If manded by the extreme severity of the labor not, planters or merchants from those countries will come here to study our own and it was not paid, the men not being strong European manufactures, and compare their quality and price. Business relations will thus be fostered, either by extending our existing relations or forming new ones. Those coming from countries just now in the throes of revolution-Mexico and Central America, for example-will be deeply impressed with the results of industrial pursuits fostered by peace and secured by stable institutions

Important and desirable as our relations with Spanish America have been, and will be in the future, they have also had their drawbacks, and frequently American capital temporarily or permanently invested in those countries has been endangered and lost. Hundreds of millions of dollars have been sunk by our merchants and manufacturers in those countries, especially in Cuba and Mexico, and if we hear less about these individual losses, it is merely because it does not suit the parties interested to parade their reverses before the world, for fear of endangering their credit. It is of the utmost importance, therefore, that the visitors from Spanish America this summer should be impressed with this fact that while our manufac- of every description are manufactured. It is The Interior Department occupies a large finest displays.

tomers as offer, beside their individual responsibility, the guaranty of political stability at home.

It will be well for our Spanish-American understand that there are other business relations now being formed by us with remoter countries, but much safer ones. Thus we have Germany, where American machinery, hardware and implements begin to be taken in increased quantities, and where we shall do a large busines dating from January 1 next, when there will be no German duty on foreign iron, steel and their manufactures. We have Australia, New Zealand and the Cape of Good Hope anxious to extend their relations with us, and offering the most absolute guaranty of freedom from revolution. Even in the New World we have countries which offer a tolerable degree of safety in this respect, as for instance, Brazil, the British West Indies and Demerara, Canada River and the Hell Gate improvement. and the Spanish Island, Porto Rico. We are not, therefore, dependent upon the Spanish American republics for a foreign market for our goods; and until we can do business with them on a reasonably safe basis, it would probably be quite as well to let Our Business Relations with Spanish other nations take the risks of loss. Their internal dissensions and disturbances are affairs of their own, which have little or ered, but as affecting commerce they have an international interest, and peoples that cannot restrain their revolutionary tendencies for twelve months at a time have no right to complain if they find themselves denied the commercial advantages eagerly extended to other nations.

> The American people are proverbially long-suffering. They will endure almost without limit, but when they are roused they are apt to make it all up in the vigor with which they pursue the offenders. We think the time has come for them to take in hand the case of striking miners swift justice. The records of no other deliberate outrages as can ours. Even Charles Reade's "Put Yourself in His Place" nowhere charges upon the unions the payment of rewards for deliberate murder, and more outrageous than all, a struggle for the honor and reward of murder and blood money. And the recent It is time to ask if these disgraceful acts that bring the blush to the cheeks of every American shall not be stopped. In Western Pennsylvania the murder of the Italians on a peaceful Sunday morning is still fresh in our minds, the expose of Mr. Gowen before the committee of investigation of the Pennsylvania legislature are too sickening to be forgotten, and now these revelations of the Mollie Maguires add to the blackening details. Is there no law or justice left in the old Commonwealth? For her own fair fame let thorough justice be done, though the party may not elect its next candidate.

There are rumors to the effect that more labor troubles are brewing in the West - the puddlers putting on their war point. The 1st of June is the date when the "hot dollar," as it is called, has heretofore begun yet there is much in the display to stimulate to be paid. This is a dollar a ton extra to the puddler, or more properly the boiler, during the hot months of the year, ostensibly to enable him to hire extra help, debefore a furnace at these times. Last year enough to demand it after the strike. It by the large concourse of people who throng may be that they consider they can suc- the Centennial grounds. Adjoining the postceed this year. That the rumors of trou- office is an interesting machine for making and ble are not without foundation is evi- printing stamped envelopes, which is well denced by the letter of resignation, of patronized by sight-seers. The envelope paper, Mr. McAnninch, the Deputy of the Boilers' Union for the First District. He says : Our strength will soon again be put to the test, hence it is highly necessary for us to become more and more united. By our united efforts, our labor will command its just reward." We hope the to win it.

from Japan to this country, and a few weeks appropriate mechanism for tolling it, shown in to the back of the 20 inch mold board is 5 feet ago a cargo from the same source was sent to operation. London as an experiment, the result being that the cargo was instantly bought up and large full assortment of birds, either protectors or orders for future supplies were given by several leading contractors and west end builders. lection of woods, and an exhaustive represen-The brick, which can, according to pleasure, be tation of cereals and the like are notable feamade of any shape, size, or color, are said to be tures of the display of the Department of Agriconsiderably harder than those of home pro- culture. The Bureau of Engraving contributes | American industry. To the Western States, duction, whilst for ornamental facings, patterns some excellent specimens of art, neatly framed. however, the Exhibition is indebted for the 1101 the New Jersey exhibits, B. Myer, of

tion of one of the young Japanese sent over by the Mikado to be educated in this country at the expense of his government.

#### The United States Government Display at the Centennial Exhibition.

The building erected by the United States government is one of the most attractive re orts in the great Exposition, and generally has more than its quota (for space covered) of visifriends from revolutionary countries to tors. It is well worth a visit, and all will find something there to interest. The military man can here study, from life-sized models, the history of the army uniform, and judge of the relative merits and serviceability of the different styles; he can examine the various kinds of fire-arms, weapons, etc., which have been and are now in use, as well as the accouterments and barness required by the several branches of the service. One of the chief attractions is the machinery employed in the manufacture of rifles and metallic cartridges. This machinery is all in operation, and exhibits the complete cess of manufacture.

The Engineer Corps illustrates its value by representations and plans of some of the otable works done by it, prominent among which are models of the iron landing pier at the Delaware Breakwater, the Rock Island which have lately been brought more promin Arsenal, the improvement of the Cape Fear ently before the public, viz.: Sea lions, seals

The Signal Service, which has proven so valuable, will hereafter be better appreciated, because the people have here an opportunity of inspecting the peculiar instruments employed in recording and publishing the action of the elements. A press is at work printing the

meteorological charts used by the government. The Navy Department display is remarkably omplete, and many who take little interest in the collection of projectiles of all kinds, or of no interest for us in themselves consid-ered, but as affecting commerce they have displayed. The government rope walk, at Boston, contributes a fine collection of ropes and cordage, starting at an immense 25 inch Russia hemp cable, the breaking strain of which is 125 tons, and ending in small cordage. From the Boston navy yard there is also a series of reels of wire ropes, ranging from the three-eighth inch conducting wire to the 6 inch hawser,

The art of submarine warfare is illustrated by a variety of torpedoes, among which is an inoffensive looking cigar shaped craft, about 25 feet long, with a propeller at one end, inscribed "Lay Torpedo," to which is attached the electric apparatus to guide and control its actions, and direct it in its destructive mission. Examples of the efficiency of this engine have and mete out to them even-handed but lately been made public by experiments. Near by is a display which commands attention from country in Christendom can show such metal workers and housekeepers. It consists of two complete ships' galleys, with all the necessary pots, kettles, pans, skillets and other utensils. These galleys are models of neatness and compactness, and present a fine appearance with their bright copper utensils. The one is of Smith's patent, and while occupying a space of but 7 feet by 8 feet, is capable of cooking for 500 men; the other is Walton's patent, and trial in Schuylkill county shows all this. in a space of less than 6 feet by 7 feet, has a capacity of providing for 200 men.

Two marine propeller engines occupy space in the transcept. They are both back-aeting; one is a double engine of 500 indicated horsepower, the other a compound engine of 800 indicated horse-power. Both are well finished, and command considerable attention from visitors. Behind the engines are a pair of compound tubular boilers, 8 feet in diameter and 8 feet long, with 119 two and a quarter

The profuse drapery of the national colors throughout the entire building is augmented in the space occupied by the Navy Department by a collection of special and signal flags used by this branch of the service. Much of the outside exhibit surrounding the building consists of the big guns for the navy and army, some of which will receive future notice. Although most of the exhibit of these two branches of the national service is of a warlike character, and demonstrates our facilities for defense. peaceful emulation among the representatives of all countries in the arts and industries which benetit mankind.

#### THE POST-OFFICE

has established a branch of the Philadelphia post-office in the building, which is elegantly fitted up and supplied with all the facilities for carrying on the business which is required ent to size, is placed by the attendant in a rack at one end of the machine. These papers are picked up singly, gummed, stamped, folded and delivered at the other end ready for packing, at the rate of from 40 to 50 per minute.

#### THE LIGHT-HOUSE BOARD

has on exhibition some handsome lanterns lenses and revolving lights, which present in manufacturers will not get frightened, and the bright sunlight very pleasing chromatic efthat if the question comes to an issue, they fects. Models and drawings of light-houses and will go into the fight with a determination beacons, interesting on account of their peculiarities of construction, are shown, and outside of the building are buoys, fog signals, etc. Bricks are now a regular article of export Among the latter is an immense fog bell, with

An elaborate display of models of fruits, a destroyers of agriculture, a very complete col-

iniversality of the inventive genius of America, library of Census and Patent Office Reports, which would evidently be a safe place to deposit a \$100 greenback, as it is not probable that these volumes will be generally perused by the millions of people who enter the building. the costumes, habits and implements of the Indians; and there are cases full of stone Ancient America also receives attention, and it is beautifully iflustrated by easts, showing in miniature the Cave City and Cliff Structures, which have been discovered in the Southwestern section of the country.

#### THE SMITHSONIAN INSTITUTE

ecupies nearly one-fourth of the Government Building, and makes a display which is intense ly interesting and instructive. Near the center of the building is a group of that peculiar family of amphibious carmyorous mammals walruses, etc.; beyond these is displayed a umber of mounted specimens of the cervida and cavicornia, and specimens of antlers and horns of the same ornament the columns of the building; several cases of smaller animals and some individual specimens scattered about form with the above a collection of American animals. Most of the specimens are creditable samples of taxidermy.

#### THE METALLURGICAL AND MINERALOGICAL COL LECTION

arranged by Prof. W. P. Blake, contains much that is interesting, and many of the exhibits are truly unique. The ores of the useful netals, their processes and products of mann facture, are shown, as are also some fine speci mens of marbles and building stone. There is so much in this collection in harmony with the purpose of this journal that we reserve for ; future occasion further comments upon it What may be termed the piscatorial display of the Smithsonian Institute is a marvel of com pleteness and a credit to Prof. Spencer Baird. In the north transcept is a group of cetacer and other mounted specimens of large fish. Near these are refrigerators in which are placed daily such fresh specimens of fish as are procurable, thus giving an eye education to visitors. In the main aisle are numerous casts of fishes beautifully colored; cases containing specimens of prepared fish for food, and others n which are arranged in similar glasses the oils from various fishes. This last is an entirely Lovel collection, and will attract attention from those interested in oils. These oils are of all colors, that of the scal being of a very dark rown, nearly black; while the oil from the liver of the sunfish is a beautiful vermilion; that from the liver of a cod, amber colored and that from the head of the black fish a clear white. The oil from the jaw of the porpoise is nearly white, and Prof. Baird states it is the inest lubricant known.

The collection of apparatus for catching fish s very exhaustive. Little minnow hooks are hown, and all sizes between it and the shark hook are displayed. Trout, bass and pickerel flies, trolling plates, and all devices to encourage fish to bite are arranged in racks and cases Even the shears, pulleys and fixtures required for small fishing smacks are embraced in the colection. Nets of peculiar mesh or pattern are draped between the columns supporting the roof, and the collection of fishery implements embraces, beside the harpoons and like instruents now in use, many primitive specimens used by Indians, Laplanders, etc. The collection also embraces fishing boats in use in various parts of the world, and a series of models of

THE INTERNAL REVENUE DEPARTMENT exhibits an elaborate frame of stamps, a set of asks and some fine specimens of gauges. THE GOVERNMENT ARCHITECTURE

illustrated by a collection of drawings of rominent buildings and a large model of the Nashville, Tenn., Court House and Post Office.

#### Plows and Cultivators at the Centen nial.

The manufacturer of plows who receives the ward for superiority from the judges appointed will have just cause for satisfaction, for competition will be very lively if all who make an exhibit of their wares enter into the contest of practical work. There are plows in great variety of patterns and character of finish, some showing signs of long and hard usage, some appearing just ready for service, and some "too handsome to put in the ground," Those which show the marks of use upon them are mainly introduced to demonstrate the great progress made in this line of manufacture. There is, however, one plow on exhibition which attracts attention for its size, and be cause it is represented as the handiwork of the great statesman, Daniel Webster. It bears the date of 1837, and measures 13 feet in length the handles being over 6 feet long, and spread 4 inches. It is a cumbrous looking tool, compared with some of the carefully proportioned implements of to-day. There are 37 distinct exhibits of plows and cultivators, all but four being from the United States.

Eleven States are represented by American exhibitors, and their displays are a credit to

space with models from the Patent Office. Al- | We are disappointed in finding that the de though there are many which have an interest- partment of steam plowing is not more fully ing history connected with them, either from represented, there being but two on exhibition. the social or political position of the inventor, One of these is Gibbs' steam spader, and from or from their being the embryo of some of its appearance seems to have been practically our now most universally useful machines, it tested. A series of curved cultivator points is evident the collection is made to dem- and cleaners alternate upon an axis which, reonstrate the fine mechanism of models and the volving, causes the points to penetrate and turn up the ground. The machine rests mainly upon In this department is also an extensive a front roller, which can be turned by means of a steering wheel, and upon a larger roller, which also acts as a supply tank for the boiler which drives a pair of 5 horse-power steam engines. The spades or points enter the ground, so that their tendency, when the plow is oper-Considerable space is occupied in displaying ating, is to push it forward, and the inventor claims that this arrangement permits of the plow ascending grades of considerable inclina arrow heads and other implements and utensils. tion. The maximum capacity in good soil is given at 20 acres per day.

The other exhibit of steam plowing machinery consists of a working model of Benson's steam plow, which cuts the soil by a series of knives encircling a revolving drum in broken spirals, and turns up the surface in short diaonal furrows.

The Canadian plow manufacturers have comined their exhibits, and make a very creditable display of plows and cultivators, the workmanship of which is first-class. Their plows are evidently intended for shallow plowing, and re longer and more graceful looking than our American standard. Their best plows have iron beams and frames.

Norway contributes a half dozen iron framed steel plows of ordinary type, and Sweden has quite a number of plows very similar to he Norway exhibit, with the exception that most of them have rollers behind the mold poard to facilitate drawing the plow backward.

Brazil displays one gang plow, one side hill olow, and two turning plows of rather primitive onstruction. They all have modern beams and frames, and one of the turning plows is evidently intended for hand drawing; it very nuch resembles some of the old plows exnibited, which are inscribed "the plow of

The most attractive American display is made y the South Bend Iron Works, who show what hey make in the way of Oliver chilled iron lows for the trade, and what they can make in highly finished ornamental work. Upon an elerated stand is placed a beautiful piece of artistic york. It is a plow with beam and handles of cherry, elaborately carved with emblems of agriculture and industry. Either side of this are two plows with beam and handles of polished rosewood lipped with ash. These three plows have gold plated mountings, and, with four handsomely painted plows with nickel plated trimmings, make a very attractive group. The iron works of these plows are nodels of workmanship, being polished and burnished like mirrors, showing neither flaw or defect. The trade plows exhibited in conection with the various adjustable points used adjoin these show plows. The company have adopted the novel expedient of keeping a supply of mold boards on hand, which are broken up and the pieces distributed to visitors, to inpect at their leisure the remarkable uniformity of the chill and the extreme hardness of the metal. This company also exhibit a brass model of their plows one-fifth size, gold plated throughout, mounted on a revolving stand under a glass cover.

The Gale Manufacturing Company, of Aloion, Mich., display two chilled fron plows in a glass case. The beams and frames are of polshed black walnut; the plows and trimmings

H. D. Buford & Co., of Rock Island, Ill., display finely polished steel plows for various purposes; also a walking cultivator, a sulky plow, and a very beautiful specimen of gang plow, called the "California."

Furst & Bradley, Mfg. Co. of Chicago, are ot behind their Rock Island neighbors in display, and their prarie breaker and combined riding and walking cultivator are specialties.

Moline, Ill., sends two competitors in steel lows-the Moline Plow Company and Deere & Co-both making creditable exhibits of nickel plated plows and cultivators.

The Peru City Piow Works also claim at ention for a similar display. B. F. Avery & Sons, of Louisville, Ky., con-

tribute some steel plows and walking cultivaexhibition gang, sulky and side hill plows, well

finished and neatly polished, which are cast of

east steel. J. C. Bidwell, of Pittsburgh, shows, beside ordinary plows, two Cuban plows for oxen, otton sweeps, bull tongs and fine crucible steel castings; and his neighbor, the Globe Plow Works, also from the smoky city, invites especial attention to a reversible steel side

hill plow and to potato cultivators. H. N. Brout, of Westfield, Mass., exhibits a ew horse hoeing machine, which appears simple, neat and effective. Horse hoes are also displayed by R. H. Allen & Co., of New York, along with sugar land plows, sub-soil plows,

ultivators, etc New York has another representative in the side hill, gang and sulky plows, exhibited by Carr & Hobson; and the Empire State sends from Hudson, Gifford, Johnson & Co.'s cultiva tors; from Illion, Remington plows and cultiators, and from the metropolis the plows of the New York Plow Company.

Connecticut glories in an ingeniously contrived trophy of plows and other implements manufactured by Higganum Manufacturing Company.

E. D. & A. B. Reynolds, of Brockton, with steel gang plows and cultivators, and the Ames Manufacturing Company, of Boston, with an assortment of plows, are the representatives from the old Bay State.

(Continued on page 17.)

# REVOLVING SCRAPER Manufacturers of DOTY'S REVOLVING ROAD and LEVEE SCRAPER

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#### The Progress of the Coal Trade.

Mr. F. A. Saward, in an article contributed to the Coal Trade Journal, says:

The Chinese, forerunners in most discoveries, knew its value centuries ago, coal having been mined near Pekin in 1290 (vide Marco Polo). The Romans are known to have used it in their own country, and from the twelfth century to the present day there has been an ever increasing trade in this most important of minerals. As long ago as in Edward the Sixth's rein (1552), coal was sent to France from England, and is spoken of as "that thynge that France can live no more without than the fyshe without water."

The keeping of the records of coal mining was not compulsory in Great Britain until 1854, and we have no figures for previous years that are at all authentic, but the product at the early part of the present (nineteenth) century could hardly have exceeded 15,000,000 tons; the output for 1854 was 64,600,000 tons, and this amount was all concumed at home, with the exception of about 4,300,000 tons; the amount mined annually has increased to the gigantic figures of 127,000,000 tons, with an export business of something like 15,000,000 tons.

iron resources which the country may have at command, and we may here note the product per ton. Now the business amounts to 22,000. of these two minerals in Great Britain for a year or two past:

. 127,016,747 . 15,577,499 14,844,936 

 Iron
 15,577,499

 Pig metal obtained from the iron ore
 6,566,451

Any question as to the possible exhaustion of the coal in Great Britain has been set at rest within a few years past, discoveries having been made in districts where it was not thought to be possible, from the running out of the seams.

And now America; these United States, the Centennial birthday of which we celebrate today, claims our attention. As a coal producer the United States now ranks second among the nations of the world; the first coal that was regularly mined and offered for sale was from the neighborhood of Richmond, Va.; it was of bituminous quality, and the first sale noted is in the year 1700; during the year 1776 it was extensively used in the vicinity. During the Revolution a foundry at Richmond was fully employed making shot and shell for the Patriot troops, using this coal. Its use was gradually extended, until in 1789 it was being sent to Philadelphia, New York and even to Boston. This coal field continued, until about 1840, to be the sole source of domestic bituminous supply for the Atlantic seaboard; the imports of coal from Great Britain and Nova Scotia furnishing us with at least 150,000 tons annually. It was in the year 1840 that the Blossburg semibituminous district of Northern Pennsylvania

opened up, and mined the wonderful amount Lehigh Valley, in 1855...... in 1874, largest year's busiof 4235 tons, which has reached the giant proportions of 1,541,163 tons-somewhat of an increase in 35 years. The total output from the beginning up to the present year being 9,066,517 tons. In 1842 the Cumberland region was opened up and forwarded 1708 tons to market; the largest yearly business has been 2,674,101 tons, while the total output figures up 28,681,455 tons. We must now leave the bituminous, merely remarking that the annual prodnet of all varieties of bituminous, semibituminous and lignite, foots up the magnificent total of 28,000,000 tons.

Anthracite coal appears to have been known and used in the Wyoming Valley, Pennsylvania, upward of a century ago, and was sent in arks down the Susquehanna to the government arsenal at Carlisle for use in manufacturing the arms wherewith our patriotic forefathers were enabled to establish this Union.

It was not until the year 1820 that the sale and shipment of this most useful article of fuel was begun. It is not necessary at this time to enter into the details of the many failures that were experienced by the pioneers; how that one of them was imprisoned by the citizens of tion, may be said to depend upon the coal and a worthless article of stone; it was carried in says: During our visit to the inventor's England's greatness, in fact that of any na. Philadelphia for attempting to foist upon them 000 tons per annum, and all this may be said to have taken place within the past 25 years, or the era of steam upon the iron rail. The estimated total shipments to market of this quality of coal since the beginning is set down at something like 300,000,000 tons.

The old-time system of forwarding heavy areles of merchandise was over artificial and natural water-ways, and coal was early in taking advantage of such a means of transport, for we find that the 365 tons forwarded in 1820, was over the system of the Lehigh Navigation, from the mines in the vicinity of Mauch Chunk, Carbon county, Pa. The coal was mined or quarried at Summit Hill, hauled in wagons over a train road to Mauch Chunk, where it was transferred into arks, carrying about 25 tons. After this we have the Delaware and Hudson Canal Company forwarding 7000 tons, over their water-way in 1829.

The first railway was built to carry cools from the mines to the shipping port, and when the steam engine was first put upon the rails, its duty was the more rapid movement of minerals, necessary upon the increased demand for fuel. This is but half a century ago, and with the anthracite coal traffic, hardly more than a quarter of a century; for the present, we will leave this truitful subject, merely adding a few figures showing the growth of railway coal traffic as an evidence of what there is in the country to be developed.

ness.
Del., Lack. & W., in 1854.
in 1875, largest year's

#### Electro-Bronzing.

Some time ago the manufacturers of hardvare in Great Britain made an attempt to electro-deposit bronze upon iron, but without much success. The experiments have been continued, however, and it is now claimed that Mr. George Hughes, of Wolverhampton, has fenders and fire irons, fire stands, dogs, and the succeeded in depositing brass and bronze upon like are being made wholly of brass, and are iron and other metallic surfaces. The process is especially valuable in respect of goods which, in transitu across seas or in actual wear, may be quickly damaged by humidity. But this is not all. Whilst the operation greatly protects the iron, and thereby lengthens the life of the product, it renders it more pleasing to the eye, for the majority of customers would not find it easy to at once distinguish the difference between an iron article which has been coated with electro-brass and one plated with or made wholly of brass.

In an article on this subject the Ironmong with electro-brass at the instance of factors, and forwarded to the manufacturers who had produced them in iron to make up into the lock itself. Completed locks, with their keys, were likewise being subjected to the bath. Some double-link tool chest locks and their keys came out well. The surface, which had been polished in the iron, retained its brightness unimpaired, and Mr. Hughes assures us that the internal works had been reached by the fluid through the keyhole, and had been well covered. Spanner keys had been similarly operated upon, and the appropriateness of the ocess to such an article commends itself in the fact that the spanner key of a tap, though usually of iron, is invariably used to move the brass tap. Axle pulley fronts, which, when they are of iron, generally have the surface of sheet brass, were leaving the bath well covered. electro-brass goods should prove upon actual work to be equal to reasonable expectations, then the invention is likely to run brass plating rather hard in some of the branches For example, the handles and hand rests of railway carriages which are of iron plated with should benceforth be made of iron covered with an electro-deposit of brass. The requisite test will soon have been made, for Mr. Hughes has just sent away a number of handles and rests to the order of the Lancashire and Yorkshire Railway Company, upon whose carriages they will be handicapped with the brass-plated goods. The electro handles defendants claimed under a sheriff's sale made the brass-plated goods. The electro handles defendants claimed under a sheriff's sale made preme Court, but the attorneys of the plaintiffs will in one respect have an advantage over the in 1861, a short time before the decease of Dr. are sanguine of success.

8,482 plated, inasmuch as the shank and plate, and St. Clair. The plaintiffs contended that such other portions which are embedded in the car-riage, will have been subjected to the operation son that the land in question, being lot 3 of of the bath, and thereby increased in durability.

favorite with the electro-brass people, because of its cheapness when made of, say, polished article, manufactured of polished steel, and chains, were being electroed. Now that brass meeting with some amount of favor among the capable of a wider application than has heretofore been contemplated. It would be easy to the process by speaking of butt binges, bright mortice locks, and so forth; but it will quickly Michigan, which fully sustained the doctrine. occur to our readers how widely applicable the process is to the hardware industry.

Electro-bronzing is not so difficult an operation. It is practiced with much success in lated if he disregarded the statute, and cited Sheffield in particular, where most of the hardware makers in South Staffordshire have until some other States; but it appearing that the recently had to send their iron castings to be statute in those States was not identical bronzed. Now, however, Mr. Hughes does the with ours, from the fact that a judgment in work in the immediate vicinity of the manu factories. Bronzed castings are favorite embellishments with the makers of a certain class of coal boxes. In work of this description Mr. Hughes says that he was very busy last winter, which was his first season. Not a bad admixture of electro-brass and electro-bronze is furnished in the article now made for South America and certain other distant markets. It is the old box iron adapted to the burning of charcoal, which, ignited by a cinder from the fire, is made to supply the required heat in the place of the former red-hot iron core. Mr. Hughes has electro-brassed the box iron itself. and has electro-bronzed bits of ornamental roofing and portions of the handle. Box irons, so turned out, are quite attractive to customers who are so great admirers of florid ornamentation as are the South Americans and the Spaniards.

#### Important Decision Affecting the Title to the Republic Mine.

A very important case has just been decided in the Circuit Court, at Marquette, which involves the title to three-fourths of the Republic Mine. The suit was St. Clair Bros. vs. The Republic Iron Co.

The plaintiffs claimed as the only heirs of the late Dr. James J. St. Clair, showing that he was seized of a three-fourths interest at the time of his death in 1861. The

section 7 of township-bordering on a mean-A little article which has previously been a dered stream, and was sold together with some five or six other lots, one being on the opposite side of the stream, when the statute resteel, in comparison with being made altogether quired real estate sold by a sheriff on execu-of brass, is the 2½ inch tobacco box. This tion shall be sold separately when consisting of known lots, tracts or parcels. This statute, then covered with electro-brass, is among the specimens. Scale chains, and other small enacted for the benefit of the debtor to prevent any more land of a judgment debtor being fenders and fire irons, fire stands, dogs, and the sold than sufficient to satisfy the debt, and also to enable him to redeem any part of the estate so sold if he was not able to redeem wealthy classes, this electro-brassing should be the whole. In support of this doctrine many cases were cited from the reports of different States; but the main authority that the plainadd to these illustrations of the adaptability of tiffs brought forward were decisions from the States of Massachusetts, Maine, Indiana and The defendants' counsel contended that the statute was merely directory to the officer, and that no substantial rights would be viodecisions from New York, California, Iowa and those States is a lien upon real estate from the time it is docketed, and other differences, and as our Supreme Court has already decided that the statute is material and one that the sheriff "may not omit," that the debtor cannot be deprived of his statutory right to redeem, Judge Williams, after patiently hearing all that could be offered, decided that the statute was mandatory, and that a sale in viola-

ated.

The property is worth a million and a half dollars. The whole tract was sold at sheriff's dollars. The property is worth a million and a half dollars. The whole tract was sold at sheriff's sale for soven dollars, which included five other lots. The result of the case is satisfactory to all, nearly everyone feeling that the decision was not only right in a legal sense, but a righteous one, as the plaintiffs claim that the person who was looking after their interest at the time of their father's death, they then being minors, was misled by a trick of the judgment purchaser's agent, so that he was prevented from redeeming. This question, of course, did not come up, the whole issue being one of law. The plaintiffs are four young men, are highly thought of, of good business qualifications, and have been endeavoring to make an honest living since they came to their majority, and it was not until the last year that they conceived the idea of investigating the sale by which their father had been deprived of this valuable property. Knowing that their guardian had been deceived as to the time of redemption, they placed their case in the hands of Ball & Black, attorneys here, who have patiently investigated every fact. attorneys here, who have patiently investigated

every fact.
Of course, the sult will be carried to the Su-

(Continued from page 15.)

Newark, sends plows. Thos. Peppler, of Hightstown, sends a sulky cultivator, and C. M. Risley, of Woodburn, neat samples of walking cultivators. E. S. & T. Bateman, of Spring Mill, show neat garden cultivators.

Of the Pennsylvania exhibits, the Pennsylvania Agricultural Works, of York, has a novel universal steel plow, with which most any kind of tilling can be done; it is like a case of burglar tools for the "multum in parvo" it represents. Titusville contributes Nevin's combined ridger, planter, hoe and digger, and Mooreville, Muschert's combined plow and cultivator. Newton contributes Hillboon, Buckman & Co.'s plows, and Mount Joy, D. Root, Son & Co.'s cultivators and plows.

Of the Ohio exhibitors, Bucher, Gibbs & Co., of Canton, display a nickel plated steel plow with oiled walnut beam and frame, placed on a revolving stand. P. P. Mast & Co., of Springfield, the "Buckeye" sulky plow and Buckeye" cultivator.

Dwight & Burral, of Hastings, Mich., contribute sulky cultivators. The Richmond (Ind.) Plow Works, steel plows with wood and Iron frames and beams. Krough, of Kroughsville, Wisconsin, cultivators and plows, and the Orchard City Plow Works, of Burlington, Iowa, steel plows.

#### Centennial Notes. .

The Cambria Iron Co. have an enormous display of iron and steel rails. The exhibit is by far the largest of any in the building, and, considering the materials, is arranged with great taste. The rails are arranged so as to form an immense bridge, surmounted by a tower, on the four sides of which appear in large steel let-ters, "Cambria," "1776," "Steel," "1876." The summit can be gained by steps, the rails being so placed as to form a gradual as-

The Lehigh Valley Companies make their exhibit in one immense case partitioned into squares, in which each company makes its own special exhibit under its own name. From an inscription on the case we learn that there are 51 anthracite furnaces in the valley, producing 527,600 tons per annum; and 7 rolling mills, of an aggregate capacity of 151,300 tons.

The Edgar Thompson Steel Co., of Pittsburgh, have a display of steel rails, beautifully finished, and forming a most attractive exhibit. They also show what is believed to be the largest steel rail ever produced, 120 feet in length, and weighing 62 lbs. to the yard.

Miller, Metcalf & Parkin, of Pittsburgh, have a display of steel as turned out from their works, with specimens from their customers of various articles manufactured from the steel, consisting of every variety of edge tools, hammers, augers, drills, clock springs, &c. These specimens are from such well known firms as the Morse Twist Drill Machine Co., the Seth Thomas Clock Co., and others of high

standing in the trade.

A. Field & Son, of Taunton, Mass., have a splendid display of over 2000 varieties of tacks and nails. On one side of the case they have a fine painting of the factory, and on the other a descriptive advertisement, each letter formed of tacks of various sizes and colors. The effect is very pleasing, and attracts general at-

John T. Lewis & Bro. have a full line of their specialties on exhibition, consisting of white and red lead, oils and minerals. The special attraction, however, is a magnificent cave formed of crystalized alum. It is a most beautiful sight, and should be seen by all who examine the chemical department. Messrs. Wetherell & Bro., whose firm will have a centennial of their own next year (having been established in 1777), have also a fine exhibit of paints, &c., &c. Powers & Weightman have a magnificent display of chemicals; in endless variety, and arranged with the most exquisite in fact, the most casual observer must see that in this branch of business Philadelphia is beyond competition, although some New York firms have very elaborate displays, which we will refer to hereafter.

Noblitt & Bro., Tioga Rolling Mills, Philadelphia, are erecting a furnace for puddling iron, and will have it completed in a few days.

Wm. & Harvey Rowland, of Frankford, appear to be the leading exhibitors of springs, &c., and, from present appearances are likely to carry off the honors in this department. They exhibit every variety of spring, graduated from the heaviest locomotive down to the lightest buggy. They have also specimens of rerolled Norway iron, and Swedish iron converted by them into blister steel. Their exhibit will, doubtless, be one of great interest to the trace, and is worthy of a careful examina

H. D. Smith, of Plantsville, Conn., has also a fine exhibit of carriage hardware, an immense variety of goods in his line, which at tract general attention from visitors to the carriage department. The exhibit is too extensive to permit of more than a brief notice at

Wm. Sellers & Co. have a very fine display of machinery, and when all their exhibits are in position it will probably be the most extensive in the building. Among other things, they show a planer for metal, with tables, thirty feet long, plate shears, steam hammers, rotary furnace, etc., etc.

The Pratt & Whitney Company, of Hartford, Conp., have a very extensive and interesting exhibit, and one that attracts a great deal of attention, particularly their machines for gun They have also bolt cutters, drop years. hammers, dies, presses, etc., and a variety of machines for which they are so well known.

Bliss & Williams, of Brooklyn, exhibit draw-Mr. Alfred Jerrauld, Jr., is in charge, and Plumb, of Philadelphia. makes the exhibit a very interesting one by ex-

plaining and illustrating the operations and advantages of their machines. Their presses and dies appear to have special merits, and will, no doubt, be carefully scrutinized by the trade.

C. A. & W. L. Teal, of Philadelphia, exhibit an improved combined punch and shear, which is said to be smaller, more compact, and lighter than any other machine to do the same work. The vibrators which give the motion to the punching and shearing heads, and which, as in other machines, have their surfaces exposed to great friction, are provided with an arrangement for taking up the wear, or lost motion, which can be done by the operator in a simple and easy manner, and avoid the necessity of repairing. The die seat which holds the dies is capable of a very accurate adjustment with the punch. This machine will punch 1 inch hole in 1 inch iron, shear 1 inch plate and cut off  $1\frac{1}{4}$ inch bar iron.

The Billings & Spencer Company, of Hartford, Conn., have a full exhibit of their specialties, screw plates, dies, lathe dogs, wrenches, drills and every description of iron and steel drop forgings. Mr. John B. Price is in charge, and appears to be fully employed answering inquiries from the trade and other interested spectators.

John A. Roeblings' Sons, Trenton, have the finest exhibit of wire in Machinery Hall. They have quite a large space surrounded with a wire cable 4 inches in diameter. Their exhibit consists in part of concentric circles of wire, the outside one being a cable 4 inches in diameter, graduating in size to the center circle, which is about 1-16 inch diameter. They also exhibit sections of the cables of the Niagara Suspension, the Ciucinnati and Covington, and East River suspension bridges. The latter cable is formed of 6000 galvanized cast steel wires, and has a strength of over 22,000,000 pounds. Their exhibit of fine wire is shown by the model of a ship, the rigging of which is entirely of wire. They have also specimens of flat rope and every kind of wire that is in use.

The Brandon Manufacturing Company seem to have recognized in their preparations the fact that beauty of style and finish, as well as practical merit, was desirable to show the high state of perfection to which this branch of American manufacture has attained. Their space in Machinery Hall is finely fitted up, having in the center an octagon show-case about eight feet in hight, surmounted by a bronze statue, holding in her right hand a balance. On the shelves of this show-case are arranged a great variety of small scales for all purposes, finished, for the most part, either in gold, silver, or nickel plate, with tasteful decorations. The heavier scales of the various styles show quite as much care in their finish, most of them being constructed of the finer kinds of hard woods, while the metalic portions are of nickel or gold plating. One, with a glass platform, showing the mechanism of the scale, gives the visitor an op portunity to judge for himself of the practical working of its principles. Thus far we have only spoken of the ornamental portion of the display made by this company. Col. Sprague, the president, evidently wishing to place their goods in fair competition with those of ordinary finish, has another space near by devoted to this class, where may be found scales of different kinds up to the heaviest sorts used for railroad purposes. They also have another exhibit in Agricultural Hall. Their entire show here comprises about two hundred scales, representing those used for almost every conceivable purpose.

The Bridgewater Iron Company has a highly creditable exhibit of forgings, cast iron paper rolls, copper and brass bars for bolts, a large variety of tinned reservoir metal, also a good display of brass and copper, seamless tubing and connections, beside a general assortment of composition and cut nails. In contrast with the nails manufactured at he present day, they exhibit a case of nails taken in 1867 from the ruins of the old Leonard House, at Raynham, Mass., and forged at that place in 1652. But their forgings on exhibition here give but little idea of the immense forgings for steamships. railroads, &c., which this Company has turned out at their works at Bridgewater, Mass., where

they have been established since 1810. The Morse Twist Drill and Machine Co., New Bedford, Mass., display a very handsome mahogany case of their manufactures, consisting of screw cutting tools, also twist drills, reamers and drill chucks. These goods bear stamp of the on

excellence of their quality and fluish A. Hammond & Co., of Hartford, Conu., has two cases of solid cast steel hammers, with several samples of drop forgings. In addition to their perfectly finished hammers, they have a variety of them illustrating the different stages of manufacture. Their new designs of machinist's hammers are worthy of careful in-

spection. Collins & Co., of Hartford, Conn., have s prominent position, and make a large and handome display of the lines of goods of their manufacture, including mining tools, axes and edge tools, machets and hunting knives, tools for sugar, indigo and hemp culture, etc., as well as axes and edge tools for tropics and southern hemisphere. All these goods are

bright and finely polished. In an adjacent section the Douglass Axe Manufacturing Company, of Boston, show a line of their well-known brand of Hunt's axes, batchets, etc., in their usual finish, making no attempt at especial ornament or display. An old axe of the date of 1826 attracts attention, and illustrates the marked advance in the pattern of this line of goods during the last fifty

Though they are not so striking nor conspicuous, there are good displays made of axes

There are a number of very fine displays of door which faces the main aisle of the building,

represent the condition of this branch of domestic manufacture. The Meriden Cutlery Company show a fine assortment of their goods, and a card reminding the world that they are the first manufacturers of table cutlery in their size for the dissection of an elephant, are exhibited with good effect.

J. Russell Cutlery Co., of Green River Works, Mass., present a very attractive exhibit of the large variety of their goods, showing some beautiful specimens of the finest and most expensive lines.

Not far from these makers is the display of the Beaver Falls Cutlery Company. They show a line of both pocket and table knives, and attract the attention of observers by their two curiosities in cutlery-the one a pocket knife of, we should say, 400 blades; the other an 8 foot carver and fork, showing their patent knife-rest and fork-guard combined.

There are several exhibits made by the manufacturers of pocket knives. Miller Bros. Cutlery Company make a good display of their oods, and give the outside world an insight into the method of manufacture of cutlery, by showing the different parts in the different stages of the process which begins with the rough materials and ends with the finished

The New York Knife Company, of the Wallkill River Works, Walden, N. Y., though not conspicuously located, make a handsome exhibit of their large variety of goods. They make, perhaps, the largest assortment of pen and pocket knives of any establishment in this ountry, and their goods will compare favorably with any similar display in the Exhibition.

The standard goods of Henry Seymour & Co., New York, are exhibited without any attempt at novelty or especial display. Among the other shears, a line of tailors' shears is conspicu-

The United States Steel Shear Co., of West Meriden, Conn., present a neat case of their the public that they are the only manufacturers in the United States of this class of coods

Marx Brothers, New York, manufacturers of Young's patent folding scissors, are duly represented.

Goodell & Co., Antrim, N. H., have a nea exhibit of shoe knives and other cutlery,

The saws, of which there is a conspicuous display, are to be found in Machinery Hall. The exhibit of H. Disston & Sons is exceedingly fine and conspicuous, and can be seen from nany parts of the huge building. It embraces, we believe, a full line of his goods.

In front of Disston is the space assigned to E. M. Boynton, and occupied by him in the exhibition of Lightning and other saws. These are placed upon the sides of a square structure. and are conspicuous, not only from a successful arrangement, but also from the prominence of the location-near the great Corliss engine. which furnishes the motive power for all the machinery in the building.

Tre Simonds Manufacturing Co., of Fitchburgh, Mass., are well represented, and E. Atkins & Co., of Indianapolis, Ind., show a fine line of goods. In addition to the saws exhibited by E. Andrews, of Williamsport, Pa., there is a saw maker's anvil, with this announce-ment attached: This anvil was the first saw makers' anvil brought to this country. It has cen used and owned for over 70 years by an Andrews, and was brought from London in the year 1819, by W. Andrews, uncle of the present wner."

While there are unrepresented some manufacturers of edge tools who could have made exhibits that would have been creditable to themselves and to American industry, there is an interesting display of this line of goods.

One of the finest assortment of edge tools is that of D. R. Barton Tool Company, Rochester, N. Y. The goods, the public are informed, are selected from stock and entered for competition." A fine portrait of the late D. R. Barton is placed above the goods, which call to mind the skill and industry of one of the pioneers in this line of American manu-

Not far distant are to be found the goods of Elmira, N. Y., which include augers, drawing ection a large case filled by William Johnson, Newark, N. J., with tools, such as hammers

levels, dividers, screw drivers, etc. A case of planes made by Alfred J. Colton. Philadelphia, is shown: also a case of planes branded "Newbould" sent by J. King & Son, New York. "Something new" in the way of planes is shown in M. C. Mayo's "Boss Plane," which is claimed by the exhibitor to do the work of sixty-four different planes, to occupy only half the space of the usual plane, and to be instantly adjustable to the different purposes to which it is applied.

A line of sugers and auger bits is shown by Charles F. Hampton, successor to L. W. Hampton, of Ardmore, Pa. In the same vicinity is the exhibit of John Booth & Son, Philadelphia, comprising bits, screw drivers, etc., and the patent brace which they make.

The Middletown Tool Company, of Middletown, Conn., give samples of their very large variety of plane irons, and of Henshaw's patent harness snaps. This exhibit is very near that of Hart, Bliven & Mead Manufacturing Company, whose varied line of goods are fully and attractively represented, in a long line of cases. One of the most handsome exhibits in the hardware department is that made by P. & F. Corbin, New Britain, Conn. It is indeed a very fine display of the locks and door trimmings, and hatchets by Wm. White, of Newark, N. J., which they manufacture. Their bolts and butts ing machines, spinning lathes, presses, etc. and of hatchets, hammers, etc., by Yerkes & are presented in a variety of styles—black, paint that sometimes acts well as a defence The sanitary advantages of using rubber tires brass, bronzed and silver-plated. The splendid

cutlery, both table and pocket, which well by its size and beauty shows off their work to fine advantage.

The file manufacturers are fairly represented and some of the displays are very large, and do credit to the exhibitors. Prominent among these are the Nicholson File Company, who America. A carver and fork, suitable from have a large double case of black walnut and ebony, containing their "increment cut" files, representing every variety and size in use. Surmounting this case is their trade mark, consisting of a carving in white holly of a mechanic at the bench, file in hand. Their display is a very fine one.

G. & H. Barnett, the Black Diamond File Works, Philadelphia, have a very complete assortment, from a one inch taper and round, to "Solid C. S. Rubber, bastard cut, weight 210 lbs., cut by hand and hardened," or a similar "solid C. S. Rubber, smooth cut,

weight 2001/2 lbs. cut by hand and hardened." McCaffrey & Bro., Philadelphia, make a handsome display of their hand cut files and rasps. Possibly every shape and cut of a file and rasp is represented from one less than half inch to over nine feet in length. The latter deserves more than a passing notice, not only on account of its being the largest on exhibition, but the character, of the work on it, being polished and etched. On one side is the figures 1776, with a wharf scene, a vessel anloading files, with the inscription, "Files Imported." Adjoining is a view of their works, with the inscription underneath, "One hundred years of freedom." There is a steamship departing showing files exported in 1876. In fact this file ahows at a glance the progress in that branch of American manufacture. On the other side of the file is a well executed picture of Philadelphia, as seen from the River Delaware, with the inscription, "Philadelphia the mechanic's home."

The observer cannot fail to see and be attracted by the very large display of files made by the American File Co., Pawtucket, R. I. The arrangement of the large assortment is very effective. On the other hand, the modest solid steel shears, and have a placard reminding little case of Smyth & Bennington, Paterson, N. J., is very likely to be unobserved by those who are passing hurriedly through the Exhibition.

(To be continued.)

#### Sea Worms.

The bark Abbie B. now lying on the sectional dock, presents a curious example of the ravages of marine insects. She was built about 18 mouths ago at New Brunswick, N. S.; is of graceful model and full rigged. A Herald reporter describes her as follows: Around the gang of ship carpenters recently working at her bottom a good many curious persons were assembled, who annoyed the workmen not a little by their questions as to her unusual appearance. The fact was, the outside sheathing or planking of her hull below the water line was almost reduced to pulp; indeed, so completely honeycombed was it that a man could with his hand pull off strips of the timber and crumble it into powder without much effort. Upon inquiry of Mr. F. L. Hewitt, one of the officers of the Dry Dock Company, the following interesting facts were stated: The Abbie B. is a new vessel and constructed of the best materials; she is engaged in no particular trade, but will go to any port for which she can obtain a charter. The name of her owner 18 C. B. Berteaux, and I suppose the vessel to be worth in the neighborhood of \$50,000. A short time since she went to Cape Breton, and remained there, discharging and receiving cargo, about two months, and during that time the marine worms got to work at her bottom and reduced it to the present condition. It is a wender how she ever got into port. It will, perhaps, cost her owner nearly \$6000 for repairs. Here one of the workmen interposed the remarks, "We call the worm, sir, the ship carpenter's friend, and, indeed, if it were not for the little insect we would lose many a good day's work." The reporter took up a piece of wood to eritically examine it. It could be compared to nothing more fitting in general appearance than a wasp's or hornet's nest, so thoroughly was it perforated, and, like the nests indicated, it was of ashen color.

Some of the insects still remain in the cells. the Elmira Nobles Manufacturing Company, of They seemed to be of a whitish color and are encased in a shell-like substance about an inch knives, butcher's cleavers, etc., and in another in length, their heads were shaped like a pod auger, as if intended by nature to be great In the case of the Abbie B. they had completely perforated the outer sheathing or planking of the hull, the place of the entrance being small and needle-like, until they reached the framework or heavy trees, when they turned back and continued their work of destruction, The holes they make increase in size from that of a pin's point to an aperture which a man's thumb would not fill.

While the reporter was examining the wood a venerable carpenter with adze in hand, joined him and said: "If you are going to write something for the newspapers I will give you a bit of information about these worms that not many people know. You see this wood is punctured right up to a hair's width of the place it joins another plank. Now the worms never cross a crack, and you see they have gone right through the outer planking, but they have not touched the frame or the ceiling of the bark; if they had, you never would nave seen her on the dry dock here."

Mr. George W. Roosevelt, a well known spar manufacturer and shipwright, here joined the group and added his valuable information. He said in effect : "Aspinwall is considered by shipmasters and owners to be a very wormy

before now on a ten month's voyage to Rio Janeiro and they have come back with their hulls sound and clean, and have sent others down to Texas and their bottoms have been fairly eaten out by the worms." Coal tar and other coverings for bulls have been tried, but the only sure defence seems to be metal. There is a composition now very generally used instead of exclusive copper; it is mainly composed of spelt, tin and copper. The worms are even found here in New York Harbor, but they do not usually do as much damage as we see in the case of the Abbie B. They will bore, as you have been told, until they reach a crack or seam which is made by the joining of planks, and generally will not cross it.

#### PHILADELPHIA CORRESPONDENCE.

Office of The Iron Age, 220 South Fourth st., PHILADELPHIA, May 16, 1876. The great event of the week has been the pening of the Centennial Exposition, the success of which appears to exceed the expectations of its most ardent friends. Full descriptions have appeared in the daily papers, and it is not necessary to repeat what, no doubt, by this time every one is familiar with. Suffice it to say, that in every respect it is equal to any previous exhibition, while in many respects it exceeds all others.

At this early stage we can only make brief and general reference to the character of the exhibits, but we will endeavor, from week to week, to give particulars of such as are most likely to be of interest to the readers of The Iron Age. In the meantime, not only this city and State, but the country at large, has abundant cause for congratulation, inasmuch as the fact is clearly established that in all the useful arts we rank with the foremost nations of the earth. While this is true of the country at large, our own city has fully established its claim to be the first and most important manufacturing city in the Union, not only in extent, but in the variety and value of its products. At no time has this been more fully shown than by a visit to the Centennial buildings, in which, from a glance at the exhibits, we gain some idea of the vastness and variety of our manufacturing interests. Represented here we have our ship yards, locomotive and innumerable machinery establishments, rolling mills, iron foundries, stove works, immense carpet, cotton and woolen mills, cabinet ware, jewelry, chemical and publishing establishments, and all these on a scale that we scarcely understand, even in our own city; and it may well be doubted if any city, in any country, produces such a variety and valuable list of wares as does the City of Brotherly Love.

What is going to be the effect of this enormous outlay of money? It is beyond the limits of our space to answer this question, but the leading point attained will be that of introducing to the notice of foreign nations such articles as we can produce in better style and at less cost than they can produce themselves. If it has the effect of establishing a foreign demand for our locomotives, fire-arms, sewing machines, saws, axes, leather, cotton goods, and other articles, it will be impossible to assign limits to the quantity and variety of American manufactures that may hereafter be sold in foreign countries. That this will be the result, to some extent at least, can scarcely be doubted, while at home hopes are expressed of an early revival of the manufacturing interests of our country, which have been depressed for so long a time past. Some improvement is already noted in the wholesale trade, and if buyers from a distance respond as they have within the past week, the effect will be felt throughout every department of business.

It is too early yet, however, to speak with my degree of certainty regarding the future, but, in the meantime, the opening of the Exposition has been under most favorable auspices, and we trust it will both continue and close under equally auspicious circumstances.

A New London Underground Railway.-The East London Railway was opened for business on April 5th. A considerable portion of the line is built under water. The commerce of the world may be said to float and navigate directly over a part of the tunnel, which extends southeasterly, from the Liverpool street station of the Great Eastern Railway, passing directly under the warehouses and the embankment, across and under the Thames River, to the New Cross Station or the Southeastern Railway, thus connecting all the roads named, and also the London and Brighton and South London lines. At Shadwell and Whitechapel, magnificent stations, each 450 feet in in length, have been erected. The total coat of this new line, which is a little less than six miles in length, has been £3,200,000, or \$16,000,-000. Of the advantageous nature of this line to the public, the London papers say there is no doubt. That portion of the line under the Thames passes through the old Thames tunnel, built by the celebrated engineer, M. I. Brunel. This work was commenced in 1824, and opened for foot passengers in 1843, but never proved of much value to the public until brought into use several years ago as a railway tunnel. The masonry is 38 feet wide and 221/2 feet high, and was carried across underneath the bed of the river by means of a great shield, within which the masonry heading was erected, and the shield then pushed ahead step by step, by jack screws, the masonry being built up as fast as the shield advanced.

The demand for rubber tires for omnibuses and carriages is again revived, and rubber manport; I have heard of vessels that have only ufacturers in London and Berlin now offer what laid there for the space of six weeks to sink at is claimed as a strong, durable and silent tire their anchorage. There is a marine copper that will outlast iron on the heaviest traffic. against these detroyers, but about the only sure are so great that it is to be hoped this most refuge is metal sheathing. I have sent vessels desirable substitute is really made practical.



Upholstery, Gimp, Brush, Card, Pail and Cheese Box Tacks; Leathered, Tinned and Iron Carpet Tacks; Bright and Blued Finishing Nails; Cigar Box and Chair Nails; Trunk and Clout Nails; Brads, Patent Brads, Copper Tacks and Nails; Iron, Zinc. Steel and Copper Shoe Nails; Polished 2d and 3d Fine Nails; Roofing and Slating Nails; Roofing Tacks, Tinned Tacks and Nails of every variety. Also, Bright and Japanned Lining and Saddle Nails, Tufting Buttons and Nails of any color Any size or style of Tack or Nail made to sample. Orders sent to either Factory or Salesroom will receive prompt attention.

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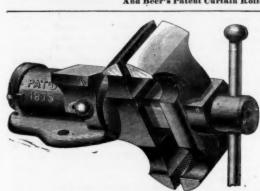
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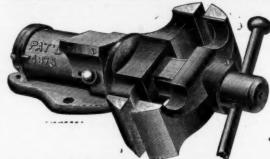
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Accompanying engraving represents the Spring field Bridge, built by the Leighton Bridge and Iron Works.]

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Locks are fitted to the Keys and not the Keys to the Locks, and as no impression of the la, no false (or counterfet) Keys can be made without the original Key to work from. The littleth of an inch in any of the tumblers of the Lock from the position in which they are fit

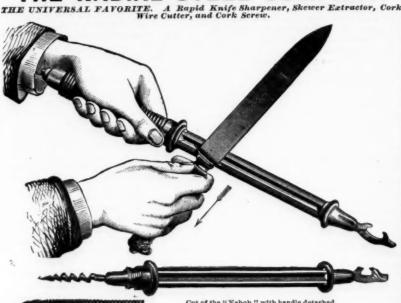
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ocks & Latches

Comprising Upright Rim Dead Locks, Horizon al Rim Night Latches, Mortise Night Latches, Drawer, Desk pboard, Box, Wardrobe, Tool Chest, and Pad Locks, &c., &c.,

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Cut of the "Nabob," with handle detached.

THE NABOB,

use, but a wonderful sharpener of the largest knives, is imperfectly represented fine of its glistening detachable radial blades and correspated handle, which is mar It is Handsomely Pinted, will Last unimpeired a Lifetime, Actus a Teuch. Cuts Cork Wire and Draws Corks. Neatly Extracts tand Isedial Presew, and one of the most universally needed and saiable of sor public carvers remain without Radial Steels, knowing of their existence, it is prehend their worth. Price per dozen, \$15.



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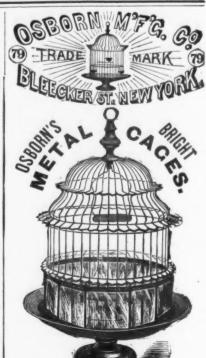
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be taken, no false (or counterfett) keys can be made without the Jone that position in which they are fitted, preof one-fitteth of an inch in any of the tumblers of the Lock from the position in which they are fitted, prevents the working of the Lock.

Each Lock contains forty tumblers, each having five false notches, which bear upon the Key at two different points and are worked without the aid of any sorings.

All working parts of the Lock are made of fine brass, securely incased, and all bolts in the Locks are
moved by an Eccentric, hence there are no springs to break or wear out. When extra Keys are desired,
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BEST IN THE WORLD. Blatchley's Horizontal ICE CREAM FREEZER



The Lynchburg Iron Works .- This rolling mill is situated in Lynchburg, Va., between the James River and the Kanawha Canal. The Virginia Midland Raiiroad also runs past it; thus giving it excellent facilities for shipping other by water or rail. The building is very constant of the constant either by water or rail. The building is very substantial, having an iron and slate roof, and is 80 feet long by 40 feet wide. It contains 1

A. Field & Son, Tacks, Brads &c.

G. F. Warner & Co., Metal Clamps and an assortment of Builders' Hardware. is 80 feet long by 40 feet wide. It contains 1 heating furnace, 1 10-inch train of rolls, 2 Bradshaw spike machines, and 1 bolt machine. N. & G. TAYLOR CO., The motive power is furnished by one small engine worked by steam and water. General T. T. Munford owns the property, and Messrs. D. Richards & Co. are lessees. The mill had been idle two years, when these gentlemen leased it and put it in operation on the 20th of September, 1875. The firm is composed of Hon. David Richards, of Knoxville, Tenn., his son, D. J. Richards, and two other gentlemen, all of whom are practical workmen. The present managers have not had sufficient time to test the mill thoroughly, but they have made a few experiments which cause them to feet proud of its work. At one time they turned out 72 bars of spike iron weighing 2300 pounds in twenty minutes. Considering that 17 passes through the rolls have to be made to work the pile down to the bar, this is hard to beat. Since September 20, 1875, they have run 95 turns, making 333,045 pounds of finished merchant iron and 392,200 pounds of spike iron. This was done with but one furnace, averaging nearly four The number of men employed was but 26, including the members of the firm. They carry no stock, working only on orders.

Blowing in the Keystone Furnace .-The Keystone Furnace, at Chain Dam Station, about two miles west of Easton, Pa., has been blown in. Mr. A. Evans, Jr., in a note to the secretary of the Iron and Steel Association, thus describes the furnace and the operation: The Keystone Furnace is 65 feet high and 161/2 feet across the boshes; has a Morris & Co.'s low pressure blowing engine, 7 foot tub and 7 foot stroke; Carter, Allen & Co.'s air blast; two double Hartman hot-blast stoves, and 18 furnished with a first-class equipment throughout. I lit the furnace on the 17th of April, put on the blast on the 18th, made the first cinder at 6 a. m. on the 19th, and made the first cast at 5 p. m. on the 19th, consisting of 5 tons of good No. 2, plain, very strong iron. The first ten days' blowing we made 210 tons extra strong No. 2, No. 2x, and No. 1 iron. On the 3d instant we made 28 tons No. 2x, still blowing on small 21/2 inch nozzles. The engine has not turned faster than 13 revolutions per minnte, and we have not carried over 825° heat on the ovens. The size of the nozzles will soon be increased to 31/4 inches. We are using half hematite ore and half magnetic, but intend to use two-thirds magnetic, probably threefourths, in say 60 days. Hematite ore costs \$2.75 per ton, delivered, and is good 38 to 40 per cent. are. Magnetic ore costs \$3.27, delivered, and Prof. Britton says it analyzes 64 per cent.; shows no sulphur and, but 0.10 per cent. phosphorus. Limestone delivered costs 53 cents per ton on 3 years contract. Coal costs \$3.66 in the stock house. Labor, ircluding blacksmith and carpenter, costs \$35 per day of 24 hours, and I pay no outside salaries. We now have on furnace bank say 50 tons good No. 1, strictly neutral, and say 25 tons No. 2x. We own the magnetic ore mines, but buy the hematite ore and limestone. There is a good limestone quarry on our property, but we can buy it cheaper than we can quarry it.

The Largest River Steamer Afloat .-The Great Republic, built at St. Louis, and recently returned from a trial trip to the Mississippi jetties and back, is said to be the largest A river steamer ever built. The hull is 350 feet in length, 101 feet in width; beam 56 feet 8 inches; 54 feet 6 inches floor; hull, 101/2 feet deep in the clear. The boiler deck is 30 feet long, with 20 foot promenade guards on each side and outside of the cabin. The main or saloon cabin is 270 feet in length, 30 feet in width and 15 feet in height; it is very handsome, being in the Gothic style, or namented with columns, scroll work, etc., thoroughly ventilated, with extra high skylights and many passage ways from the cabin to the main and upper decks. There is grandeur, the country. comfort, good taste and almost everything else chimneys are 73 inches in diameter, 76 having been established in 1855, under the feet high from the hurricane deck, name of the Hardwareman's Newspaper, which and 113 feet from the water to their tops. The name was changed in 1859 to The Iron Age. shafts are 26 feet long, 181/4 inches in the jour | The next oldest journal of its class is The Ironnals, four flanges on each, 22 arms in the flanges; wheels 38 feet in diameter, 18 foot buckets. She has capacity for 5000 tons of cargo, and stow- Hardware, and Metal Trades in all their



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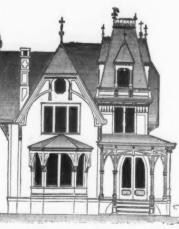
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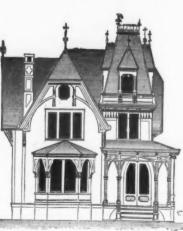
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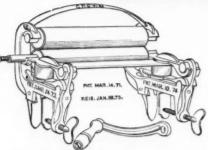
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#### A New Process for Making Rails for Narrow Gauge Railroads.

The Bessemer process has become so success ful in this country as to have virtually destroyed the business of making large iron rails, and as iron rails wear out they become a drug on the market. They cannot be used for mer chant iron, as an iron rail is composed of three distinct qualities of iron, i. e., a hard, cold-short metal in the head to give it wearing ability; a ductile metal in the flange, to give it elasticity and toughness, and a neutral metal in the web, to secure a perfect weld between the two disnew rails by cutting and faggoting, but a new up nearly two thirds of the pile.

By a process recently patented old rails are large 60 lb. rail to a 30 lb. rail by reducing the section. Each rail is taken separately and deliberations. placed in the rolls, and in five passes is rolled down to the proper size, 30 lbs. to the yard, and 30 feet long. The advantages claimed are that it saves cutting and fagotting, saves reworked tops and bottoms, and produces a rail much better, because the relative qualities of iron in the different sections are not disturbed. As it requires only five passes to finish a rail by the new process, a mill will turn out twice as much in a day as is possible by the old method.

Considering all of these advantages, in connection with the lew cost of old iron rails, it will be seen that 30 lb. rails for narrow gauge railroads can now be produced at much lower cost than they have ever been heretofore.

Persons desiring to purchase rails, or to manufacture them under this patent, can receive further information by addressing the patentee, Mr. Jacob Reese, Pittsburgh, Pa.

#### How Pins are Made.

The pin machine is one of the nearest approaches that machines have made to the dexterity of the human hand. A small machine about the size of a lady's sewing machine, only stronger, stands before you. On the back side ings upon the outside, after the manner of a a light belt descends from the long shaft at the ceiling that drives all the machines, ranging in rows on the floor. On the left side of our machine hangs on a peg a small reel of wire, that has been straightened by running through a compound system of small rollers.

This wire descends and the end of it enters the machine. This is the food consumed by this snappish, voracious little dwarf. It pulls it in and bites it off by inches incessantly, in one hundred and forty bites a minute. Just as he seizes each bite a saucy little hammer with a concave face, hits the end of the wire three taps and "upsets" it to a head while he grips it in a countersunk hole between his teeth. With an outward turn of his tongue he then nary road would hardly be practicable. In the case of masoury, when used for guards, the the machine. This is the food consumed by lays the pin sideways in a little groove across the rim of a small wheel that slowly revolves just under his nose. By the external pressure of a stationary hoop these pins roll into their places, as they are carried under two series of small files, three in each.

These files grow smaller toward the end of the series. They lie at a slight inclination on the points of the pins, and a series of cams, levers and springs are made to play "like lightning." Thus the pins are pointed and dropped in a little shower into a box. Twentyeight pounds of pins is a day's work for one of these jerking little automatons. Forty machines make five hundred and sixty pounds daily. These pins are then polished. Two very intelligent machines reject every crooked pin, even a slight irregularity of form being de

Another automaton assorts half a dozen lengths in as many different boxes, all at one and unerringly, when a careless operation has mixed the boxes from various machines. Last ly, a perfect genius of a machine hangs the pins by the heads in an inclined platform through as many "slots" as there are pins on the papers. Under them runs the strip of paper. A hand-like part of the machine catches one form of each of the slots as it falls, and by one movement sticks them all through two corrugated ridges in the paper, from which they are to be picked by the taper fingers in boudoirs, and all sorts of human fingers, in all sorts of human circumstances.

Paper Ware .- For some years paper ware of various kinds has been a regular article of manufacture in this country. Eight or ten years ago the business was conducted in a very small way, but at present it has assumed larger proportions, and is now established among the regular industries of the country. We have recently examined some of the ware manufactured by the French Paper Ware Company, of Springfield, N. J. This company was organized in December, 1874, and since that time has been putting goods upon the market. These are made of the best Manilla stock. They are firm, strong and light. They will not shrink nor taint water which may be placed in them. Being made in a single piece and upon taper rollers the pails are free from the danger of opening at the seam, and are of better form than many of the old styles. By the use of improved machinery the style and finish has been much improved. Among the articles which they make are water pails, slop jars, House in New York, A. HAMMACHER, 209 Bowery.

slop pails, water carriers, foot baths, wash owls, flower pots, spittoons, table mats, etc. The articles are subjected to heavy pressure in forming them into shape, and are smooth solid and strong. Mr. W. F. Hyatt, 280 Pearl street, New York, is the sole agent for this city, and keeps a full line of these goods.

American Society of Civil Engineers. The eighth annual convention of this society will be held in Philadelphia on Tuesday, Wednesday and Thursday, June 13, 14 and 15. Sessions for the consideration of professional subjects and of regular business will be held tinctly different qualities. Consequently, when daily from 91/4 o'clock a. m. to 11/4 o'clock p. reworked into merchant bars, the iron is not m., in the Judges' Hall on the Centennial uniform. Old rails have been reworked into grounds. A reception to the society will be given on Tuesday evening at the Union League rail made of such a faggot does not wear well, Club House by the Philadelphia members, and because the proper quality of metal is not of-ten in the proper place, and to obviate this the No excursions outside of Philadelphia will be faggot or pile is made with old rails in the mid- attempted, as all the spare time at the disposal dle, a large plate of hard from on the top, and of members will be fully occupied in visiting a plate of ductile iron on the bottom, and rolled the Exhibition. The western gallery of the tops and bottoms; but by this plan few old Main Exhibition Building has been fitted up, rails can be used, as the tops and bottoms make and will be used by the society as a place for exhibits of American engineering and for meet ing during the Exhibition. The members of cut into lengths of 15 feet and heated in a the American Iron and Steel Association have Stemens' furnace, and simply reduced from a been expressly invited to attend the convention of the society, and to take an active part in its

> The Pull Mall Gazette describes a new danger to railway trains, as follows: "A most extraordinary accident happened recently at Accring-ton railway station. The train due from Manchester about 10.30 o'clock, having discharged its passengers proceeded on to the Burnley Viaduct, and was being shunted on to a siding when the van by some means caught in the frogs, and was thrown athwart the rails. The rear and side were plunged against the embattlements of the arches just at a point where the line crosses the main street of Blackburn road, and the huge stones forming it were sent flying to the road below. The hour being late, it fortunately happened that only one man was passing at the time, John Henry, a fishmonge in the town. He was knocked down by a large stone, and his face was frightfully cut and bruised, many of his teeth being knocked out. The collision of the van with the embattlements, and the fall of stones, made a great noise, and hundreds of persons congregated." There have been comparatively few accidents of a serious nature happening to trains upon elevated roads or viaducts. The few that have happened in this country make it apparent that the use of battlements, fenders, guards or railparapet, are worse than useless to prevent accidents to trains. A few years since a train ran from a high embankment, or bridge, in one of the Eastern States. A legislative commission, or committee, was appointed, and for some time were considering the propriety of compelling guards to be erected along such dangerous places to prevent cars from jumping the pary road would hardly be practicable. In the case of masonry, when used for guards, the result will be anything but desirable, as this accident shows. The immense momentum of a railway train cannot be successfully resisted. We have known of a railway car, when "set off" into a depot in charge of a green brakeman, run into a stone platform and break up 20 feet of it, and that, too, after it had crushed the buffer posts at the end of the track. Such power can only be controlled by keeping the cars upon the track.

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WANTED.—By a young man, 22 years of age, with a firm in the hardw re or metal trade. Steady employment and an opportunity to learn sought after. Salary no object. Security if required.

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Parties wishing to engage in substantial manufacturing, will be given the equivalent or \$5000, Place Junction, near Chicago, Ill. Shop built and machinery in. YOUNG & ROWLEY, Real Estate and Loan Agents, 182 Dearborn St., Chicago, Ill.

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Sole Owners and Manufacturers of Wright's Pat. Tin Sieve

No. 66 Washington Street. CHICAGO, May 19th, 1876.

I hereby warn all persons from buying or selling the Sieve as now made and known as the Mann Sieve, by which the bottoms are double folded into the rim, as the patent on same belongs to me. Interference has now been declared in the U. S. Patent Office.

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In a well established business (8 years) in a West ern city. "Jobbing and Retail" in Machinery, Railroad, Mill, Steam and Gas Fitters' Supplies. Steam Heating one of the leading branches, and paying; amount of business annually over \$100,000. Want to extend business and increase the present apital \$20,000. None but first-class business mer with experience, energy and capital need apply.

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I am now manufacturing for the use of Exhibitors at the Centennial, one of the most unique business cards that could be presented to a vi-itor.

On one side is a mirror, on the back is where you name and address are stamped in gilt. It is round in form, about the size of a Silver Half Dollar, INDESTRUCTIBLE. It will be prized by those who receive one, and not laid aside as paper business cards are. Prices for quantities furnished

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## Steel Castings.

Solid and Homogeneous. Guaranteed tensile strength, 25 tons to square inch. An invaluable substitute for expensive forgings, or for Cast Iron requiring great strength. Send for circular and price list to CHESTER STEEL CASTINGS CO., Evelina St., Philadelphia, Pa.

#### Wanted—A Partner,

In a foundry and machine business, already well established. Locality splendid and healthy.

A practical man with means is wanted to join a practical man who is already well established CAR WHEEL FOUNDRY, P. O. Box 134, Selma, Alabama

## Briesen's Patent Agency

FOR SECURING INVENTIONS, TRADE MARKS, &c., IN AMERICA AND LUROPE,

No. 258 Broadway, New York. A. V. BRIESEN.

#### NOTICE! POND'S TOOLS.

The undersigned has assumed the Personal Property, including accounts, finished and unfinished Machinery, good will &c., connected with the manufacture of Machinism's Tools as conducted by Mr. Lucius W. Pond since 1847, and will consinue the said business at the old stand, cor. Union and Exchange Sis., Worcester, Mass., under the name of DAVID W. POND, Successor to Lucius W. Pond. CARD.—Having assumed the business mentioned above. I solicit Inquiry and Patronage, with guarantee that present standard of Workmanship, and quality of Machinery shall be maintained. A large quantity of Machinery shall be maintained. A large quantity of New AND SECOND-HAND TOOLS, ALL STYLES AND SIZES, For Sale at Low Prices. Send for list of second-hand tools. Store as 96 Liberty St., New York, will be discontinued from Feb. 1, 1876, and all sales made from manufactory.

Respectfully, DAVID W. POND, Successor to Lucius W. Pond. Respectfully, Successor to Lucius W. Pond.

## DISSOLUTION OF COPARTNERSHIP

The firm of McClernan & Hymes is this day dis-solved by mutual consent. The business of the firm will be liquidated by M. McClernan alone, No. 130 Liberty Street. NEW YORK, Jan. 20, 1876. M. MCCLERNAN, D. HYMES.

ANDERSON BROTHERS.

#### Special Notices.

WANTED TO PURCHASE, 100 tons good Second-Hand T Rails, 18 or 20 lbs. per yard.

ving particulars,
PIPER & THOMPSON,

#### Wanted.

A man to keep a set of books and clerk in hardward store, or would sell a half or whole of stock. None but a practical hardware man need apply and the best of reference must be given.

> Address S. L. McKISSON, Des Moines, Iowa.

#### For Sale.

#### Hardware Store For Sale.

A Hardware Store near Beston. Satisfactory rea-ons given for selling. For particulars address HARDWARE, P. O. Box No. 995, Boston, Mass.

BLAST FURNACE FOR SALE at Anapanoch, Ulster Co., State of New York, on the Delaware and Hudson Canal, with extra facilities, and a capacity of 30 tons per day Anthracite or 15 tons of Charcoal, together with a splendid water-power, goes with the turnace. The furnace is in good order and could be pat in blast in a short time. Will be sold very low on accommodating terms. Charcoal can be had for many years.

Address, H. BANGE, 94 Gold Street, New York City.

#### Magnetic Iron Ore For Sale.

1000 tons; contains about 60 per cent. iron; is uitable for making Bessemer steel; makes a fibrous iron; mill cinder may be worked with it to advan-Delivery at any point on Lakes Ontario or Apply J. M. MACHAR, Eric. Apply J. M. MACHAR,
Kingston, Ontario, Canada.
See specimens from Machar Mine at Centennial.

#### FOR SALE, at Taunton, Mass.

The Steam Engine Works known as the Foundry and Machine Co., consisting of all the Real Estate, Machinery, Tools and Patterns necessary for building Corliss Steam Engines, from 10 inch to 34 inch cylinder; also a full stock of Tools and Machinery, for general job work. This property will be sold extremely low, either for the Machinery, Tools and Patterns to be removed, or the entire property. The city of Taunton offers superior advantages as a location for any kind of machine business, having a navagable river for receiving coal and iron. Two lines of railroad connected by steamers between New-York and Boston; superior Western connection by railroad, and a large and intelligent manufacturing population. For further particulars or catalogue of machinery address

GEORGE A. FIELD.

Taunton, Mass.
Or J. M. LEONARD, Somerset, Mass.

#### FOR SALE.

TESTING MACHINE, built by the Son.a Boston Iron Co., arranged for tensile and com-

Boston Iron Co., arranged for tensile and compressive strains, capacity 150 tons.

MILLING MACHINE, built by Brainard Milling Machine Co., cutters swing 28 inches diameter, and spindle set at right angles, which insures accurate work

IRON ROOF, that coveren New England Iron Co.'s Mill, 8 arches 80 feet span, posts 18 feet high, building now 80 feet wide by 90 feet long.

ROLLING TABLE, for straightening Iron.

PUDDLE TRAIN, for Billets and 3, 4 and 6 inch Bars.

FIVE DRILLS.
CORRUGATING MACHINE, Complete.
CORRUGATED SHEET IRON and barbed

SMALL UPRIGHT ENGINE, 15 H. P., PUMPS, Etc. Apply to WM. E. COFFIN & CO.,

HARDWARE STORE, FOR SALE. Is one of two stores situated in a city of seven housand inhabitants, three railroads, fine country urrounding. Best of reasons for selling. For furher information, address, KING & SON,

#### Lima, Allen Co., Ohio. BLACK WALNUT For Sale Cheap.

Large quantities of pieces of plank suitable for turn-ing and sawing into any article requiring such wood.

Perfectly Dry and Sound. PROVIDENCE TOOL CO.

FOR SALE. At Lowest Manufacturers' Rates.

#### GUNS & SHEET ZINC.

Best German and Belgian Brands, By LOUIS WINDMULLER & ROELKER, 20 Reade Street, N. Y.

#### HARDWARE BUSINESS For Sale.

In the city of Norwich, Conn, an old stand facing two streets. Rents low. Good help and doing a prosperous business. Large back country. The best of reasons given for selling. Address, FULLER & PARISH, Norwich, Conn.

#### FOR SALE.

An & inch mill train for making Merchant, Band and Hoop Iron. Will be sold cheap. W. W. JONES, Apply to

Near the Lehigh Valley Railroad Depot, Allentown, Pa. Fo

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For

To

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at 10c. a copy, Weekly Spanish Review and Prices Current. The undersigned is also a Translator from and into the English, Spanish, French and German, Lateast Translations made: for the governments of Germany and Spain, Pacific Wall S. S. Co., Walter A. Wood; Morris, Wheeler & Co.; Todd & Rafferty; John T. Dunkin; Fisk & Hatch; R. W. Wilde; Wilson Sewing Machine Co.; J. Hess & Co.; H. Marquardt; M. Echeverin & Co., and Chas. E. Little, New York; Hocking Valley Mfg. Co.; W. F. Potts, Son & Co. Phila; Atlantic and Pacific Land Co.; B. E. Flemming, Jersey City; Wilder & Co., Savannah, and the Tanlie Co.; Strondsburg ("Emery Grinder"), Abendroth & Root Mfg. Co., to whom he reders.

(F Estimates furnished of translations and setting up of Spanish, German and French Catalogues for the Centennial. C. KIRCHHOPP,

Metal Reporter of "The Iron Age," Box 3091, New York P. O.

# Trade Report.

Office of THE IRON AGE, WEDNESDAY EVENING, May 17, 1876. The past week has been dull and uneventful in Wall street, and the several markets have been practically free from exciting causes. Money continues abundant and easy. Borrowers have been freely accommodated at 21/4 @ 3 per cent. The discount rate on prime commercial paper is 4 @ 6 per cent. Present indications warrant the belief that the money market will rule easy for some time to come, probably for the next three or four months. After that time it may become active, and even stringent, if the legal tender notes forwarded to Washington for the withdrawal of national bank issues should be held in the Treasury as a special fund, instead of being counted as cash in the United States Treasurer's accounts. What disposition will be made of them we do not know, but it will T be very easy for the Secretary of the Treasury to considerably contract the legal tender circu lation if he sees fit to do so. Information as to the Treasury policy in this matter is earnestly desired by the business community.

According to latest reports, the silver dis bursements at all points amounted to \$4,421,000. At New York \$1,875,000 had been disbursed. The premium cn small change is 1 @ 3 per

The gold market has been very steady during the week, as will be seen from the following table showing the daily range of the premium :

	Highest.	Lowest.
Thursday	112%	112%
Friday	112%	1121
Saturday	11236	112%
Monday	112%	1121/2
Tuesday	11236	112%
Wednesday	112%	112%

Government bonds have moved in sympathy with gold, and close strong. State bonds railroad mortgages and miscellaneous investment securities are dull and steady. The closing quotations of governments are given below.

The stock market has been heavy in its general features. There are no developments of public interest concerning the "railroad war," but the competing trunk lines are taking freights at whatever they can get them for, There are no established rates. The "telegraph war" also continues without material change in the situation. The principal dealings of the week have been in Lake Shore, Western Union, Pacific Mail, Michigan Central, Erie and St Paul.

The following is a comparison of the bank averages for the past two weeks :

May 6.	May 13.	Differences.
Loans\$257,015,600	\$255,808,800	Dec. \$1,206,800
Specie 19,804,400	18,881,000	Dec 923,400
Legal tend's.39,182,200	42,643,400	Inc. 3,461,200
Deposits,205,669,000	207,900,300	Inc., 2,231,300
Circulation 16,199,400	16,140,500	Dec 58,900

The foreign trade movements for the week are shown in the following tables:

IMPORTS. For the week ended May 13:

1874. 1875. 1876. Total for week...\$7,523,869 \$4,550,362 \$4,865,677 Prev. reported..\$151,226,213 \$133,181,694 \$116,778,431 Since Jan. 1....\$158,750,082 \$137,735,056 \$121,644,108

Among the imports of general merchandise were articles valued as follows:

	Quant.	value.
Anvils	55	548
Brass goods	5	815
Bronzes	25	5,742
Chains and anchors	4	170
Copper		470
Catlery		18,997
Gas Fixtures	1	998
Guns	40	7.958
Hardware		372
Iron, pig, tons	409 -	
Iron, sheet, tons		759
Iron, cotton ties	184	493
Iron tubes	230	391
fron, other, tons	249	14,067
Metal goods		13,481
Needles		4,924
Old metal		474
Plated ware		1.046
Per. caps		247
Saddlery		812
Steel		9.807
Spelter		5,977
Tin, boxes		96,718
Tin, 2620 slabs	110.230	5,977
Wire		6,614
Zinc.		2,171
		-1444
EXPORTS, EXCLUSIVE OF	SPECIE.	

Fo	r the week	ended Ma	y 16:	
	for week	1874. \$6,604,654 100,700,204	1875. \$4,106,581 85,144,965	1876. \$3,780,256 87,702,286
~ince	Jan. 1	\$107,304,858	\$89,251,516	\$91,482,53
	10.9	HA DEGOG	OWNCOVA	

EXPORTS OF SPECIE.
For the week ended May 13:
Total for the week
Total since Jan. 1, 1876 \$1,563,231 Same time in 1875. 6,022,045 **same time in 1874. 1,622,745 **Same time in 1874. 1,716,510 Same time in 1873. 1,716,510 Same time in 1872. 640,712
Government bonds at the close were strong. We quote:
DIA Ashed

we quote:		
	Bid.	Asked
U. S. Currency 6s	.127	1273
U. S. 6s 1881, reg	1914	192
U. S. 6a, 1881, con	199.52	1227
U. S. 5-20 1965, rog.	11432	115
U. S. 5-20 1865, COU	11444	115
U. S. 5-20 1865, new reg	. 119	1193
U. S. 5-20 1865, con.	. 119	1193
U. S. 5-20 1867, reg	19134	121%
U. S. 5-20 1867 CO3.	19137	1213
U. S. 5-20 1868, reg	199	1233
S. 5-20 1868, cou	193	123%
1. S 10.40 recr	1174/	117%
U. S. 10-40 cou	1104	118%
U. S. 58, 1881, reg.	11078	
U. S. 5e, 1881, cou	1177	117%
S. Se, 1881, COU	.111736	117%
The following were the closin	g quote	tions of

Asked

active shares :	
Atlantic & Pacific R. R. Preferred	Bi
	17
-mengo & Morthwestern	39 58
Chicago, Rock Island and Pacific	
Col., Chic. & Ind. Cent	4

	-
ev., Col., Cin. & Ind's	47 981⁄c
icago & Alton	99
Drof 10412	108
Pref	41
inton	40
inton	106
elaware & Hudson Canal109%	110
dams Express	110%
merican Express	63
nited States Express	71
ells, Fargo & Co. Express 88	89
	14%
arlem	15
Pref 28%	
Frei 23%	24
inois Central95	9614
ansas & Texas 10	11
ike Shore	53%
ichigan Central	47%
orris & Essex103	104
ilwaukee & St. Paul	37%
Frei	68%
ariposa	736
I Pelessassassassassassassassassassassassassa	. 8
ew York Central109%	110
ew Jersey Central 90%	91
ew Jersey Southern 1	1%
hio & Mississippi 161/2	16%
acific Mail	211
anama	131
ittsburgh & Fort Wayne102%	1033
scific of Missouri	14
uicksilver	16
" Pref 20	22
L., Kan, City Northern 5	536
" Pref 2836	28%
ol., Wabash & Western 214	23/4
ol., Wabash & Western 2% nion Pacific 60%	-
estern Union Telegraph 65%	65%

#### GENERAL HARDWARE.

The commercial community is at present discussing, in a very plain and straightforward manner, the best means to be adopted in cases of business failure, and it seems to be the general opinion that the motto of the late successful merchant, A. T. Stewart, "No compromise with insolvents," is the speediest road to a sound business in the future. One thing is certain to result from the prominence given to this subject of late, and that is, incompetence and dishonesty in business affairs will in the future meet with summary treatment. That the lack of confidence in commercial integrity is not confined to this country will be seen from the following extract from an exchange: "Commercial confidence in London is lost," remarks a well-informed correspondent difficult and slow process. A time will come when an end to such a condition of things will be reached. There is no doubt that the existing policy of caution in nearly every department of business will be persisted in, and that any hope of a decided revival must be postponed until the autumn. The revelations of late, both before the House of Commons Committee and in the bankruptcy courts, and, I regret to add, before the criminal courts, have been of too serious a nature to admit of merchants embarking freely in commercial enterprise, unless they are very certain of what they are about."

We print below a letter signed New York, which comes to us from one of the largest and most substantial Hardware manufacturing establishments in this country. We believe that such letters as this one, and others of a like import which have appeared in our columns lately, are timely, and deserve thoughtful consideration. They represent, without doubt, the views of a large proportion of our solid business men.

To the Editor of The Iron Age.—Dear Sir: It is a fair indication of a return of good sense and sound judgmeut that Mr. James' letter, published in The Iron Age of April 27, and its endorsement by "Hardware," published May 4, meets with such universal approval by the trade. The time seems to have come when the disastrous realities of business failures, honest or otherwise, which have occurred during the past few years, have convined men the disastrous realities of business failures, honest or otherwise, which have occurred during the past few years, have convinced men, that wild unlimited credit to tresponsible and unworthy men, for the sake of increasing sales, and afterward easy compromises, do not help to save a balance on the right side of their profit and loss account at the close of the year. Our friends in the trade, who pay one hundred cents on the dollar, have the right to protest that we shall not compromise with their dishonest or incapable neighbors, for a small percentage on the same goods, which are to be sold in the same market, thereby permitting serious harm to the business of honest, able trade, and enabling dishonest and incapable persons to still disgrace the business with their presence. It does not pay to make compromises with incapable persons, even if they claim to be horest, for it only allows them a little longer time to flaunt their puny names on the shingle that, perhaps, before has borne the name of some pioneer and honored one in the business, and then they go down more disastrously than would have been the case had they the business, and then they go down more disastrously than would have been the case had they stepped down and out when their trouble first came. Failures from calamitous causes merit stepped down and out when their trouble hist came. Failures from calamitous causes merit great consideration, but not so those resulting from incapacity or dishonesty. Yours, truly, New York.

May 15th, 1876.

Trade continues dull, and few changes of importance have occurred during the week. A correspondent, writing from St. Louis under recent date, says :

"Trade somewhat lighter than last week, es pecially in shelf goods, but orders are yet small and numerous. Water very high at this point, and much loss of property along the Missis-sippi River. River commenced to decline yes-

The Nail manufacturers, represented in this city, held a meeting on Thursday last, when the following circular was issued:

We beg to notify you that our net price for Nails from date will be \$2.85 for 10d, until fur Old Colony Iron Company, No. 211 Pearl

Oxford Iron Company, Nos. 88 and 85 Washngton street.
Fuller, Lord & Co., No. 139 Greenwich

street. The Parker Mills, Nos. 73 Pearl and 40 Stone streets.
W. H. Wallace & Co., No. 12 Albany street.
Borden & Lovell, Nos. 70 and 71 West street.
New York, May 11, 1876.

We quote Nails \$2.85 per keg for 10d., net, with a disposition on the part of some makers to decline orders for large lots at that figure. the price of Strap and T Hinges to discount 60 per cent.

Blacksmiths' Bellows discount 40 per cent.

bers, corner of Church street.

lowing circular: Patent Convex Fluting and Smoothing Iron,

In offering this Fluting and Smoothing Iron to the trade, at greatly reduced prices, we call attention to some of its advantages:

to be within the reach of all.

7th. It combines the two articles in one, taking up the room of but one machine, and is always ready for use.

8th. There is no waste of capital, as when not wanted for fluting, it is ready for use as an ordinary smoothing irou.

It is made of the best material, and finished in the best manner; the face is finely polished; the fluting attachment is made of brass. Price, \$815 per dozen. \$15 per dozen.

G. B. WALBRIDGE & Co., 83 Reade street, N. Y.

Fernald & Sise, No. 100 Chambers street, have been appointed agents for the Patent Continental Locks, the sale of which was formerly controlled by the Schweitzer Mfg. Co. They will carry a full line of these goods in stock, and will issue in a few days a descriptive price list for those and the Excelsior Callipers and Dividers, which have also been added to their sortment of specialties.

Patterson Brothers, No. 27 Park Row, request us to caution the trade against a swindler who, without authority, obtains goods in their name. They inform us that their buying is done only by a member of the firm, or by formal written orders.

The Middletown Tool Co., Middletown, Copp., have a sample case of their goods on exhibition at the Centennial. Their location is of that city, "and although we are daily wait- in the Main Building, P. 71. These samples are ing for its return, we know that to regain it is a in charge of their agents, the Hart, Bliven & Mead Mfg. Co., who are represented in Philadelphia by Mr. Chas. J. Bliven.

#### BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, May 17, 1876. Scotch Pig.-But a moderate business has been done, and the market rules quiet, with weak prices. The following are the quotations for makers' Irons:

Gartsherrie No. 1....... Cottness No. 1...... Glengarnock No. 1.... Eglinton No. 1 .... Manufactured Iron .- There is very little

doing, and prices are weaker. Best Staffordshire Bars are quoted £8, 10/@ £9, 10/.

Rails are unchanged.

#### IRON.

American Pig.-The tone of the market s better, and considerable transactions have taken place. Among them sales of Forge Iron, aggregating about 15,000 tons, within a couple of weeks. This Iron goes East, and was bought in various lots at prices which have been kept private. The Thomas Iron Company report the sale of 1100 tons No. 1 Foundry at \$22, and 2200 tons No. 2 Foundry at \$20. They have this week advanced their price \$1 per ton, making it now \$23 for No. 1 Foundry, and \$21 for No. 2 Foundry. These are now the general prices for the Lehigh brands, but some can still be had for \$22 and \$20. So we still quote as follows: No. 1 Foundry, \$22 @ \$23; No.

2 Foundry, \$20 @ \$21; Gray Forge, \$19 @ \$20. Scotch Pig.-Prices remain without change. Importations continue small, and are taken up by consumption, so that no accumulation takes We note the sale of 100 tons Coltness on private terms, and 100 tons Eglinton at a private price, said to be about \$28. We quote Coltness, \$30 @ \$31; Glengarnock, \$30; Eg-

lington, \$28 @ \$28.50. of talk. We quote Iron, \$38 @ \$42, according quotations: Bar, 9c.; Sheet, 91/2c.., and Pipe, to quality and the location of the mill. We hear | 10c.; discount to the trade, 10 per cent. e sale of 5000 tons Steel at the West on private terms. We quote Steel, \$60 @ \$63 at still offering from second hands at 7%c., cur-

\$22 @ \$23.

quote \$28 @ \$30.

#### METALS

Copper.-The market during the week has been exceedingly flat, sales aggregating between 300,000 and 400,000 pounds Lake Superior on the spot at 21%c. @ 21%c., closing at the inside figure. The first arrivals from the Lake, ia Sault, are expected toward the latter part of next week, but as most of the mines have sold their early shipments (May, June and July), none of this new Copper will be put on the market. Whatever the manufacturers may then chance to stand in need of, they will not unlikely be compelled to pay more for than the closing figure to-day, which is 21%c. Baltimore we quote nominally 21%c. The shipnents made abroad from this coast since January 1 now sum up 5,250,000 pounds. Cable advices to hand from London at the commencement of the week, report Best Selected £86. 10/, Bars, £79, being a decline of 10/ from the previous week's quotations. The latest mail from able quantity. We quote the following as the The Russell & Erwin Mig. Co. have reduced London has just reached us, dated May 6, and current purchasing rates: London has just reached us, dated May 6, and contrett purchasing rates the contenting to the price of Strap and T Hinges to discount 60 containing the statistics at the commencement of the current month, according to which, on Leaving out 1475 tons Australian aftoat and 2500 leaving out 1475 tons Australian aftoat and 2500 leaving blacksmiths' Bellows discount 40 per cent.

London has just reached us, dated May 6, and current purchasing rates.

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 10c.; Brass, 10c.; Composition, heavy, 12c. @ 18c.; Lead, solid, 54/c.; Tea Lead, 5c.; Zinc, 44/c.; Pewter, No. 1, 13c.; Chilli aftoat and chartered, advised by cable,

The Union Nut Co. have removed from their lit will be found that there was a visible supply in England and at Havre of 31,988 tons, against 30,551, \$6,903, 39,624 and 34,235 the previous four years, and that Chill Bars were worth £79, 10/, against £83, £74, £88 and £101 in 1875-1872. The deliveries from stock in England and France during the first four months had been 18,779 tons, against £1,239 and 20,570. These figures may not represent much statistical strength as they appear, but they are, at all events, not unfavorable when we take into account the present modold stand, No. 78 Beckman, to No. 99 Cham- supply in England and at Havre of 31,988 tons, 2d. It is a fluting machine as well as a we take into account the present mod-2d. It is a fluting machine as well as a smoothing iron.

3d. The fluting attachment being made of brass and convex in form, it has all the advantages of the crank machine.

4. Its durability—there being nothing about it that can get out of order.

5th. Its simplicity—being so simple in construction that s child can use it.

6th. Its cheapness—the price being so low as to be within the reach of all.

7th. It combines the two articles in one, tak—

we take into account the present moderate value of the metal on the other side. Aside from this we are all fully aware that the present and prospective use of Copper is vastly increased in all civilized countries since the introduction of new alloys of paramount importance. Hence the abiding faith which most people in the metal trade have in the value of Copper. The manufactures of Copper are quiet. We quote: New Sheathing, 31c., and Bolts and Braziers, 32c.; Bronze and Yellow Metal Sheathing, 21c., and Yellow Metal Bolts, 28c., cash.

Tin.—The tendency in the Tin markets of

Europe and America has remained a decidedly upward one, London having advanced to £74 with Straits (to-day's cable advices), the market being active there and still rising, while here the improvement has been uniaterrupted to 17%c., gold, the lowest previous point this year having been in a single instance 16%c., gold. London, it will be remembered, had at the time dropped to £71; the rebound has consequently been even greater here than on the other side. This is due to the peculiar position of the metal at New York and Boston, where the visible supply has now been reduced to a mere trifle. At London and Amsterdam the metal is not so easily controlled on account of the unwieldiness of the available supply. As for the visible supply in England and Holland on the 1st instant, it was as large as ever, being 14,753 tons against 14,466 April 1, and 18,736, and 9803 on May 1, 1875 and 1874. During the first four months of the current year the deliveries in London and Holland had been 6713 tons against 6382, and 5397 in 1875 and 1874. Straits Tin on May 1, 1876, stood £72 against £83 and £97 at the corresponding date in 1875 and 1874. The foregoing shows that the statistical position remains pretty much the same as it has been for a long time past, but that the deliveries were all that could be expected in the midst of general paralyzation on the other side, and a late spring opening. The price certainly seems low enough compared with former years, enough although it is asserted from Australia that they can produce Tin still about £10 lower per ton than its present currency value. Sanguinity on the subject of Tin, at however so low a figure, has hitherto been the most expensive fancy a man in the metal trade could have indulged in during the past three years, and even now this should not be lost sight of. The dealings would have been larger among us but for the diminished material to work upon. We quote at the close, in gold, large lots: Straits, 17%c. @18c.; English Refined, 17%c.; ditto Common, 17%c.; and Banca, 22c. Tin Plates have been quiet both in England and here, but the impression still seems to be that we have about touched bottom. We quote, gold, per box, large lines, ordinary brands, as follows: Charcoal Bright, \$7@\$ 7.25; ditto Ternes, \$6.621/4 @ \$7; Coke Tin, \$6.25 @ \$6.50; and ditto Ternes, \$6 @ \$6.25.

Lead .- The apathetic condition of the Lead market remains as heretofore reported, there being a total absence of consumptive demand, and little or none in immediate prospect. The stock of Common Domestic is, for the most part, concentrated in one hand, the asking price being, we understand, 6%c, gold. Meanwhile the government has, we are told, accepted 6.15c., gold, for 20 tons, delivered in this city. Finer grades Domestic must also be quoted lower, Selected Newark having been sold at 71/c., currency, while fine Western brands are yet held at 7c. @ 71/c., currency, at St. Louis. Rate of freight thence to New York, 45c. Europe is quiet and weak. The manu-Rails. - There is little doing even in the way factures of Lead are steady, at the following

Spelter and Zinc.-Domestic Spe Old Rails .- A sale of 500 tons has taken per cent. for cash. There is very little demand, place on terms which are withheld. We quote and in order to place round lots considerable concessions would have to be made Scrap .- The stock is small, and the demand | The dull state of the Spelter trade is also felt We note sales of 300 tons at \$28. We in Domestic Sheet Zinc, which is offered in a April, there has been little or no delivery of small way at 9%c., currency. Foreign Sheet Zinc we quote 81/2c. @ 81/4c., gold, at which figures it moves slowly. Of Foreign Spelter there is none here. Europe is stationary. There have been some large purchases effected for English account at Breslau (Silesia), on the basis of 23.20 marks for Godulla.

Antimony .- Notwithstanding the high ruling in England, the course of the market here has been against holders, and we cannot quote this metal any higher than 16c., gold.

#### OLD METALS, PAPER STOCK, &c.

There are still no signs of improvement in the condition of this market. Old Metals are laboring under a season of duliness, and dealers see no prospect of soon selling their accumulations of stock, no matter how great the concessions may be. The Rag and Paper Stock market is dull and declining. An occasional large sale is effected, but this is an exception which is an improvement of 10/, and Chili and not the rule, as buyers are holding off and cannot be induced to purchase any consider-

#### COAL.

The trade during the present week presents about the same features that we noticed in our last report. Quotations are unchanged, and are nominally adhered to; little Coal is sold, and there are constantly accumulating stocks at the shipping points. When, however, Coal is wanted in quantity, the purchaser finds no difficulty in buying far below the regular rates. The outside Coal controls the prices, and even mpany Coal can be obtained at prices much below the company prices. This, at first sight, appears to be a want of good faith on the part of the companies, but there are so many circumstances to be taken into account in connection with the sale and delivery of such cargoes, that it is impossible to say that there has been an absolute breach of faith. Cargoes of Coal, on boats, after having been refused, cannot be sold at anything like circular prices, and, in some instances, boat loads of company Coal have been disposed of at least cents below circular rates. Circumstances vary, but there are opportunities constantly occurring to purchase below the quotations. It is only necessary to let it be known that one wants Coal and it will be offered at astonishingly low figures. This is natural on account of the state of the trade. At this season of the year there is, as a rule, but little demand for Coal; in addition to this manufactories are, on account of the dull times, taking much less Coal than usual; the Eastern trade is dull, and the bituminous trade supplies the larger proportion of it. The consequence is that every one is auxious to sell, and every possible means is used to force Coal upon the market; add to this the fact that prices are placed far above their legitimate point, and it cannot be wondered at that dodges are common for working off Coal. Consumers feel little confidence in the strength of the combination, and certainly the next two months will give it a very severe test; the amount of Coal that can be worked off in that time is almost nothing compared with the stock accumulating at the shipping points, and the quantity which, according to the apportionment, will come to tide water. On the other hand, the combination are aware that it is absolutely necessary for them to hold on, as a break at the present time would send prices down from \$1 to \$2 per ton, and the market would take no more Coal than it does at present. To use the expressive remark of a merchant, "It would knock the bottom out of things generally." Perhaps the best advice that can be given to a consumer is to buy from hand-to-mouth. The winter prices are not likely to be as high as those of the latter part of the season, and if one has Coal enough to get through the months of September and October, when prices are likely to reach a maximum, or, rather, when the market will be stiff and circular prices realized, there need be little fear for prices through the remainder of the fall and winter. Some large consumers and careful buyers whom we know seriously contemplated purchasing in quantity during March or April for future delivery at the low rates then ruling, but, on mature considera-tion, concluded to buy as they needed, and run the risk of a break in the combination or the market.

In the face of a diminished consumption the tonnage of the year is from 600,000 to 800,-000 tons more than last year at the same date. The apportionment of Coal to the companies, though it cut down the production very much, did not take into account the quantity which outside parties were able to ship. Added to this, as a depressing influence, we have the fact of unduly high prices, which, of course, stimulated outsiders to the utmost.

The failures and suspensions manufacturing firms have been very severely felt tidewater, and are informed that sales have been made at the works at \$56.50.

reney, less brokerage, while the combination both by the trade in general and by the large companies, and it would not be surprising if some were shorn of their dividends by the losses.

Upon inquiry it seems that, while the companies received large contracts before the 1st of Coal upon these contracts. For example, we know of a dealer who put in bids for some 8000 tons of Coal. His contracts were accepted, placed on file, and each month be receives the usual request to state the quantity of Coal he wishes delivered; but up to the present time, we think, he has not taken a single cargo directly from the companies. This is, by no means, an exceptional one.

The Bituminous trade remains practically in the same state as last week. The production is lightly behind that of the same week of last year, but the total amount shipped for the year is greater. In the Cumberland region almost all the companies are at work, having resumed upon the old terms.

There are no changes in quotations of freights. Vessels are plenty, and boat captains may be said to be taking a vacation, to judge from the number of them one finds in and about Trinity Building in this city.

We quote as follows:

Cumberland, at Georgetown	\$3.50	0	83-75
West Virginia, at Baitimore			
Kittaning f. o. b., Baltimore		68	4.35
Newburg Orrel, at "		0	4.50
Despard, at Baltimore			4.50
Broad Top, at South Amboy	0.0		4.75
Morrisdale, Wigtons		0	5.00
Cunard		@	5.00
Consolidation Coal Co. f. o. b., George-			
town		0	3.65

15 15 15 15 15 15		4·95 4·95 4·95 4·95	4·95 4·95 4·95 4·95 4·95	5.55 5.55 5.55 5.55 5.55 5.55	4·85 4·85 4·85 4·85
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15		4·95 4·95 4·95	4·95 4·95	5 · 55 5 · 55 5 · 55	4·85 4·85
15		4·95 4·95	4.95	5 · 55 5 · 55	4.85
15		4.95	4.95	5.55	4.85
65	4:75	4.85	5:05	5:58	4:85
65	4.75	4·85 4·85	4:95 5:08	5.55 5.65	4:75
65	4·75 4·60	4·85 4·70	4·95 4·80	5·58 5·40	4·75 4 60
Lump.	Steamer.	Grate,	Egg.	Stove,	Chestnut,
	dwn7 65 65 65	Common Steemer		d mary 1 25 4 95 4 95 5 05 65 4 75 4 85 4 95 65 4 75 4 85 5 0 8 65 6 5 4 75 5 4 85 5 0 8 65 6 5 6 6 5 6 75 6 75 6 75 6 75 6 75	Common No. 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

Augusta, Me. Albany.... Amesbury, Mass Bangor, Me Bath, Me on. Mass 1.80 95† Bridgeport, Ct .... Bristol, R. I. Cambridgep't, Mass Derby ......
Dighton .....
East Cambridge
Fall River ..... 1.40 1.50 1 00 1.25 1.40 1.40 Mystic..... Newark... New Bedford 85 1 10 70 80 85 40 70 90 1.25 1.40 1.45 95 1.30 90 1:45 1:60 1:40 1.25 oughkeepsie, N. Y. Saco. Sag Harbor. Salem, Mass  $1.00 \\ 1.00$ 1.60 1.60 Salem, Mass. Salisbury Pt., Mass. Stamford Saybrook. 70 75 80 Froy... Warren, R. I. Wareham .... Weymouth.... Wilmington, N. C. 1.70 1.65 1.25 1.45 \*3c. per bridge extra. Harbor Freights, 40 cents. † And Sou Towing.

#### IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending May 16, 1876:

Hardware.	Speilman, Wolff & Co.
Brockner W. Jr.,	Sheet, cs., 22
Wire netting, rolls,	Order.
42	Bars, 15,410
Frasse P. A. & Co.	Pig, tons, 300
Mdse. pkgs., 10	Steel.
Field Alfred & Co. Casks, 4	Brown Wm.
Chains, cks., 1	Cases, 29
Guental Geo. & Son,	Moore Henry,
Mdse. pkgs., 48	Bales, 24 Bors, 13
Livingstone W. & F.	Bars, 13
Grindstones, cks., 25	Naylor & Co.
Grindstones, 2075	Cases, 29 Bars, 16
Laughland & Co.	Prosser Thos. & Sons,
Wire, pkgs, 14 Lennox E. S.	Tire forgings, 8
Bale ties, lots, 143	Sulzbacher, Gitterman &
Wire netting, rolls,	Welles,
26	Packages, 75
Moore Hengy,	Cases, 22 Woodford W. O.
Files, cks., 6	Cases, 27
Merchants Dispatch Co.	Order.
Packages, 14 Moore's J. P. Sons,	Cases, 1
Mdse. pkgs., 1	Bars, 21
Reeve, Osborn & Co.	Bundles, 65
Chains, 2	Metals.
Rivera de J. & Co.	
Plows, cs., 2 Schoverling & Daly,	Bruce & Cook, Tin plates, bxs., 689
Mdse nkgs 9	Cort N. L. & Co.
Mdse. pkgs., 2 Sussfield, Lorsch & Co.	Tin plates, bxs., 202
Cases, 2	Drexel, Morgan & Co.
Cases, 2 Upson & Walton,	Lead, pigs, 1610 Douglass Jas. & Co.
Wire rope, coils, 4 Wiebusch & Hilger Mfg.	
	Scrap, brass, bbls., 3;
Co.	Eggers & Heinlein.
Anvils, 100 Casks, 2	Scrap, caunon, 24
Mdsc. pkgs., 5	bxs. 1 Eggers & Heinlein, Scrap, caunon, 24 Cannon balls, tons, 8
Order.	BROWITOR & CO.
Rods, coils, 57	Scrap, yellow, pkgs.,
	Scrap, copper, pkgs.,
Iron.	2
Alexander E. L.	Montell F. T. & Son, Scrap, bbls., 5
Rods, lots, 250	Scrap, bbls., 5
Brown Bros. & Co.	Scrap, cs., 1
Bars, 2687 Champy H.	Scrap, cs., 1 Meyer M. Lead, bars, 1217
Cast, lots, 1	Naylor & Co.
Douglass Jas. & Co.	Tin plates, bxs., 426
Scrap, tons, 9	Phelps, Dodge & Co.
Eneas Jos.	Antimony, regulus,
Scrap, tons, 4	cks., 50
Laughland & Co	Tin plates, bxs., 6977 Ross A. B. & Co.
H-ybands, bdls., 256 Marvel Wm. D.	Antimony, cs., 2
Ore, tone, 259	Order.
Perkins & Livingstone,	Tin plates, bxs., 6484
Cast, cs., 15	Tin, ingots, 300
Castings, 110	Tin, ingots, 300 Lead, cks., 18
Cases, 125	Antimony, cks., 67

#### PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, May 16, 1876.

Gray Forge and No. 2 is also in fair demand, are confident of better rates, sooner or later. but No. 1 is neglected and unsettled, making it difficult to quote the market correctly, as prices are almost as various as the brands. Many of months; Hanging Rock Charcoal, No. 1 the leading holders make \$23 their quotation, Foundry, \$28 to \$29, 4 months; No. 2, \$25 to although \$22.50 would probably be an average \$26; No. 3, \$23 to \$24; Cold Blast Car Wheel, of their week's sales, while others are still \$40 to \$45. The stock of Mill Iron in yards of offering to sell at \$22, but where buyers commission men here is estimated at about have become accustomed to any particular 18,000 tons, a reduction of some 6000 tons dur-Iron they do not care to change for 50c. per ing the past six months, and nearly all the Iron ton. Sales during the week will not exceed coming forward was either sold to arrive or 2500 tons, within the following range of prices: sold on arrival, so that there is scarcely any No. 1 Foundry, \$22 to \$23; No. 2 Foundry, \$20 to \$21.50; Gray Forge at \$19 to \$22.50, including 500 tons Chickies on private terms, understood to be at outside price, and several hurdred tons Lebigh at the inside figures.

BLOOMS. - The market is quiet, demand light, Blooms, \$41 to \$42; Charcoal Billets of superior

BARS.—There is very little change from our last reports. The demand is spasmodic. For a few days it appears as though the demand 100 tons, \$3 per ton off; 100 to 500 tons, \$4; was going to be very active. Orders come in rapidly, and immediate delivery required; then comes a few days relapse, and duliness prevails again. This will probably continue until confidence is fully restored. In the meantime the wants only, and no large engagements are being entered into, hence the irregularity which may be noted at the rolling mills. Some days all aclivity, which in turn are succeeded by duliness Shoes, 51/4, cash. and depression. Most of the mills, however, are running full time, feeling confident that the day is not far distant when any additions turn, and about the only complaint is in regard they are now making to their stocks will require to be drawn upon. Prices are firm, and sales made upon the basis of 2:35.

RAILS .- The demand for Steel Rails continues quite active, but as the mills are not in a position to contract for early delivery, no sales of importance have transpired, although lots of a few hundred tons each have been sold at our quotations. The Cambria and Pennsylvania Steel Companies are understood to have orders on hand sufficient to keep them employed to their utmost capacity, day and night, for the next three months. Consequently, Iron Rails, in some cases, will probably be sold to supply urgent needs, in lieu of Steel Rails. We are informed that buyers for quantities aggregating 20,000 tons are now in the market, and are expected to place their orders within a few days. We quote Steel Rails \$60 to \$62, and sale of 500 tons from Western mills at \$61, delivered in Chicago. Iron Rails, \$40 to \$42, with sales of small lots at a trifle higher rates.

OLD RAILS.-We do not hear of any transactions for several days past; there are no lots pressing on the market, and full prices are asked; in some cases lots are held at \$24 to \$25, but it is not likely that sales to any extent could be made at these figures. The letest transactions were at \$22.50 to \$23.50, which we quote as present market value.

SCRAP.-The demand is quite active, and with small supplies, sales are easily made at our quotation price, according to quality: Cast, \$16 to \$19; Wrought, \$26 to \$29. Considerable sales are reported at \$17 and \$28, respectively.

NAILS .- The demand does not increase, although prices are stiffening, with a strong probability of an early advance in prices. We quote \$2.75 for 20J keg lots and upward, and \$2.85 to \$2.90 for smallar quantities.

TIN PLATES.—Business continues moderate and without any change in prices, we quote as follows: I. C., 10x14, \$8:50 to \$9; I. X., 10x14, \$10.25 to \$11; Best Charcoal, leaded, 28x20, \$16 to \$16.50; other good brands, \$15 to \$16; good fair, \$14 to \$14.50; Bright Tin, for cans, &c., \$7 to \$7.25; good Bright Tin, do., 86:75 to 87:25: Coke, leaded, 14x20, \$6:25 to

LEAD.-Foreign Pig is rather quiet, and for Domestic there is scarcely any inquiry either for Common or Refined. For Common, \$6.20 to \$6.25, gold, is the nominal price; at \$6.25 the government is in the market to sell 200 tons. it is said the production is now far in excess of the wants of consumers. Manufactured is steady at 9c. for Bars, 91/4c. for Pipe and 10c. for Sheet, less 10 per cent. to the trade.

Sнот.—The market is unchanged. We quote with 10 per cent. discount, cash in 30 days: Drop Shot in 25 lb. bags, 9%c.; in 5 lb. bags, 10%c.; Buckshot in 5 lb. bags, 10%c.; Bar Lead in 5 oz., 1/4 lb. and 1 lb. bars, 8%c.

OLD METALS.—The following are the current quotations to-day: Heavy Old Copper, 17c.; Light Tinned Copper, 16c.; Copper Bottoms 14c.; Heavy Red Brass, 14c.; Light Red Brass, 131/c.; Heavy Yellow Brass, 13c.; Light Yellow Brass, 12c.; Heavy Clean Pipe Lead, 6c.; Junk Lead, 51/4c.; Tea Lead, Light Paper, 6c.; Tea Lead, Heavy Paper, 5c.; New Zirc Clippings, 41/4c.; Old Sheet Zinc, 4c.; Yellow Brass Turnings, 8c. to 10c.; Red Brass Turnings, 10c. to 12c.; Plumbers' Lead Joints, 61/6c.

#### PITTSBURGH.

Office of The Iron Age, 14 Fifth Avenue, } Ріттявивен, Мау 16, 1876. } Ріс Івох.—There has been less activity in the market during the past week, but the feel ing is firm, nevertheless, and good irons, both Mill and Foundry, especially the former, ar Pig Iron.-The depression in this line of held with considerable tenacity at very full business continues without abatement, and so prices; indeed, the market has got into tha far as can be seen there is no immediate pros- position that sellers are not offering freely, and pect of improvement. The demand is of the prefer selling a small to a large lot at curren most limited character, and neither low prices rates. The recent action of the manufacturer nor anything else appears to stimulate the trade in advancing the products has not been with into activity. There is some inquiry for Besse- out its effect in stiffening holders of the raw mer Iron, but the supply is small and the pro- article, and while no very important advance uct of the leading furnaces already engaged. is probable for the present, sellers generally

going into sale yards.

MANUFACTURED IRON.-The market is very firm at the advance established at the last meeting of the Association, and an increased business is looked for now, as buyers have no longer any reason to hold off in expectation of and prices weak, but we do not hear of any the movement proving a failure, as it is better change in quotations, which are as follows: organized and stronger now than it has been at Charcoal Scrap Blooms, \$47; Charcoal Ore any time yet. Each firm in the Association has been required to make a special deposit of quality, from \$60 to \$62; and Bars for convert- \$100 for every puddling furnace, which is to be ing into Steel, made of best Champlain Iron, forfeited in the event of being detected in acting in bad faith. Discounts are as follows Less than 10 tons, full card, on a bases of 21/4, 500 to 1000 tons, \$5 per ton.

NAILS.-There is a fair business, although, as expected, the recent advance has curtailed the demand somewhat, but the most of the factorics are in full operation, and a good summer disposition prevails to buy to supply immediate and fail trade is expected. The combination rates are \$2.85, 60 days, for less than 200, and \$2.75, 60 days, for 200 kegs and upward. Horse Shops quiet and unchanged at 414, cash; Mule

> STEEL.-The Steel mills are nearly all reported busy, some of them working double to prices, which have been cut so fine that there is not much of a margin for the leading sizes. Steel Rails continue steady; no recent sales, but prices are still maintained, \$60 to \$62, cash, deliverable at works. Some of our manufacturers are making a very fine display at the Centennial.

> SCRAP.—There is rather more doing in Scrap Iron, but there has been no recent change in prices. No. 1 Wrought Scrap quoted at \$24 to \$25, cash, delivered.

> Petroleum .- Refiners outside of the combination continue to ship to Richmond by river to Huntington, and from thence by the Chesapeake and Ohlo Railroad, while those refinersin the combination continue to ship to Philadelphia and Baltimore by way of the Pennsylvania Railroad and the Baltimore & Ohio Railroad. The outside refiners can ship to Richmond for \$1 per barrel, whereas the rate to Philadelphia and Baltimore is something like \$1.75. The most of the refineries hereabout are in operation, and the production is large.

WINDOW GLASS .- Trade is only fair, but prices are very firm and closely adhered to. Discounts off Western list, 45 per cent. for less than a car load and 50 for car load lots.

A. G. Hatry, manufacturers' agent, Pittsburgh, Pa., has issued the following circular under date of 10th instant. He has also issued a circular showing the Eastern market rates, which we would be pleased to publish in this connection, but it has not yet reached us. We are pleased to learn that Mr. Hatry is doing, in addition to his Western, Southern and California business, a considerable export trade with Cuban and South American ports:

Cuban and South American ports:

Office of A. G. Hatby, Manufacturers;
Agent, Iron, Nalls and Railead Supplies,
Pittebu. 6H, May 10, 1876.

Gents: I have not issued my regular circular for last quarter, owing to the unsetted condition of the iron market; but within the past few weeks the manufacturers have held meetings and established rates which will be adhered to; and I am, as heretofore, fully prepared to execute any orders that I may be favored with, at the lowest market rates, and quote the market about as follows:

Iron, assorted orders, 25-10 basis, Pittsburgh card, when ordered in lots of from one to ten tons; in ten ton lots, ten cents per hundred

tons; in ten ton lots, ten cents per hundred off; in lots of ten to one hundred tons, fifteen cents per hundred off; 60 days, or 2 per cent.

for eash.

Large quantities, from 100 to 1000 tons, special rates given, according to rules made by Western Iron Associaton, May 5th, 1876.

Nails, 2\*85 rates, less 10 cents per keg for 200 keg lots and upward; 60 days or 2 per cent.

Sheet Iron 3 7-10 for No. 24, as a basis.
Window Glass, 50 per cent. off list in carload lots; 40 and 10 per cent. off for small

quantities.

Rails, Plates, Boiler, Hoop, Band, Angle and T Iron and railroad supplies quoted, and special prices given in all my lines on personal application, or by letter. Soliciting a share of your patronage, I remain, yours, truly,

A. G. HATRY.

#### CHATTANOOGA.

Mr. S. B. Lowe, under date of May 14th, reports as follows: There has been more activity in Pig Iron during the past month than for the month previous, and holders have advanced their prices, and in most instances where sales have been made have realized the advance. The establishment of a storage yard here, under the ware house laws of the State, has induced owners of Pig Iron to avail themselves of it, and there is now something over 4000 tons in store at this point. The movements of Iron and Ore at this point, for the month of April, have been as fol-

Pig Iron stipped,	local ar	d through	i	2,310
New Rains snippe	u			1,718
Iron Ore received.				1,380
I would quote	Iron a	t about	s follo	WA:
		KE.		
	CO	ALD:		
No. 1 Foundry, ex	tra		\$21.6	00 @ 23.00
No. 1 Foundry			201	00 @
No. 2 Foundry			18 (	00 @ 19.00
No. 1 Forge			17:0	00 @ 18.00
No. 2 Forge			16 (	00 66 17:00
White and Mottle	d		144	50 @ 15:00

HOT BLAST CHARCOAL. No. 1 Foundry, extra. \$23'00 @ 25'00
No. 1 Foundry. 24'00 @ 32'00
No. 1 and 2 Forge 19'00 @ 30'00
White and Mottled 16'00 @ 18'00

COLD BLAST CHARCOAL 

#### BOSTON.

MAY 13.-Pig has had no business worthy mention during the week, nor any inquiry ex for small lots. Holders continue to quote 2 to 26c, from Gray Forge to No. 1, in all many of variations as to brand. Bar is baving a fair trade, and the market holds very steady at \$51.50 for guaranteed Refined Iron. The situation here secures greater strength from week to week as the Western mills tone up to the prices week as the Western mills tone up to the prices they charge Western sellers upon orders from the East. Of course, everybody understands how it is and why. Competition with our local mills and importers compels Western sellers to quote in the East what they would not in the West. But just now, with almost all the dealers wholly out of a number of very desirable sizes, and the local mills and importers unable still to fill orders at the prices, the Western men are squeezing out an advantage, and have stuck ers wholly out of a number of very desirable sizes, and the local mills and importers unable still to fill orders at the prices, the Western men are squeezing out an advantage, and have stuck uniformly and stiff for 2½c. since the lat of May. The competition just now settles between Cleveland and Pittsburgh, but wholly on freights; 25c. is as yet the lowest point reached for a contract of 400 to 500 tons; but the points of delivery here make some difference; hence there is a standing out. Common Iron still quotes from \$40 to \$49, and here and there small jags are to be picked up \$t\$ a trifle less. Steel is very quiet and steady. We quote American Tool, 14c. to 15c.; American Machinery, 8½c. to 9½c.; Bessemer Tires, 5¾c.; Sweet's Excelsior Tire, 7½c.; Enclish Tool, 15½c., gold. Copper is listless at 21½c. to 22c., as to quantities. The stock held here and at New York is pressing for a market, but does not give down in price; and, as consumers are not specially crowded with work, very little business ensues. For manfactured we quote: New Sheathing, 30c.; Bolts and Braziers, 31c.; Yellow Metal Bolts, 20c. to 29. Lead seems to have lost all snap in its decline of a week ago, and hangs upon a dull market with very little tone. We quote Pig, 6½c. for Domestic and 7½c., gold, Foreign sheet, 10c.; Pipe, 9½c., currency; Tin Lined Pipe, 16½c.; Bar Lead, 9½c., less usual trade or 10 per cent. discount. Antimony continues in small request at 16c., gold, an advance of ½c. for the week. Spelter remains at \$8, currency, for both Foreign and Domestic, New York deliveries, Boston holders quoting \$8.05. Tin, influenced by the catles of Wednesday, quoting London £1. 10/ higher—say, £72. 10/, and Singapore ½c. better—say, \$21.50—experienced an advance of ½c. here, with holders unwilling to sell even at their own values. Plates are steadier and in fair supply. We quote Straits, 17½c.; Banca, 22½c.; Refined English, 17c. to 17½c., gold. We quote Plates; Charcoal I. C., \$7.25.; Coke, \$6.20 to \$6.50; and Terne at \$6.50 to \$7.50, gold.

#### ST. LOUIS.

Messrs. Spooner & Collins, from commission agents, 409 North Third street, St. Louis, under date of May 11, report the Iron market as follows: Our market remains the same as last reported, demand and prices being light and

	tand and bill		ngne and
low. We que	ote same as la	st:	
Mo. Stone Coa	l, No. 1 F'dry. No. 2 F'dry.	25.00 @ 2	6.00—4 mos. 5.00—4 mos.
65 66	Gray Mili	94:00 @ 9	5.00—4 mos.
ii Charcoal	No. 1 F'dry		5.00—4 mos.
ti ti	No. 2 F'dry	99-80 @ 9	4.00—4 mos.
66 66		49 30 (6) 2	
	Gray Mill		4.00-4 mos.
Tenn. Charcos	No. 1 F'dry		5.00—4 mos.
66 66	No. 2 F'dry	23.00 @ 2	4.00-4 mos.
	Gray Mill	33.00 @ 3	4.00-4 mos.
Va. Coke Iron	No. 1 F'dry		6.00-4 mos.
11 41	No. 2 F'dry	24.00 @ 2	5.00-4 mos.
£6 44			4.50-4 mos.
H. R. Charcoal	No. 1 F'dry	26.00 @ 2	7.00-4 mos.
H. R. "	No. 2 F'dry	24.00 @ 2	5.00-4 mos.
H. R. " H. R. "	Gray Mill	24.00 @ 2	5'00-4 mos.
Massillon Iron.	A. No. 1	31.00 @ 3	2.00-4 mos.
69 68	B, No. 1		0.00-4 mos.
86 65	No. 2	27.00 @ 2	8.00-4 mos.
Cold Biast Car	Wheel, Mo	35.00 @ 40	0.00-4 mos.
10 6	Tenn.		5.00-4 mos.
85 6	Ala	33.00 @ 3	5'00-4 mos.
44 6	Hang-		
ing Rock		82.00 m. 85	3.00-4 mos.
Mo. Charcoal F	looms	60.00 @ 70	00-4 mos.
" Scrap	44		00-4 mos.
" Scrap Mo. Charcoal	Hammered	00 00 00 00	oo I moe.
		75 00 @ 80	00-4 mos.
Assorted Bar I	ron	G 9	35-90 dys.
No. 1 Wrought	Scrap	1:10 @ 1	25—cash.

#### CINCINNATI.

Messrs. L. R. Hull & Co., under date of May 13, write us as follows: Pig Irox.—The Pig Iron market retains the general features that have characterized it for some time. If consumers of the raw material are not at present heavy purchasers, it is at least somewhat encouraging to know their stocks sire rarely large; and as the hand-to-mouth policy of buying has been so long pursued, any improvement in trade would create quite an active market. For the present, however, both buyers and sellers adhere generally to the cautious policy prevalent in these times. A large percentage of the furnaces tributary to this market are idle, with little or no Iron in stock, and a very considerable number will make no blast this year. Our prices below cover the range of the market for all grades: CHARCOAL.

CHARCOAL.
Hanging Rock No. 1. 19 ton, \$24:00 a25:00 -4 mos. 10 No. 2. 23:06 a -4 mos. 11 Forge. 21:00 a 22:00 -4 mos. Southern Brands No. 1. 23:00 a -4 mos. Virgina No. 1. 23:00 a 24:00 -4 mos. 11 No. 2. 22:00 a 24:00 -4 mos. 12 No. 2. 22:00 a -4 mos.
" Forge 21 00 @ -4 mos.
STONE COAL AT D COKE.
Hanging Rock No. 1. # ton. \$22 00 @ 25 00—4 mos.  "Forge
COLD BLAST.
The second secon
Hanging Rock Car Wheel 30 tn \$40.00 @ 45.00 4 mos

#### LOUISVILLE.

souri "thern Br'ds "

Messrs. Geo. H. Hull & Co., under date of May 15, writes us as follows: Our market is fairly active without any decided change since fast report. The usual time, 4 months, allowed on quotations below:

	HOT BL	AST CHAI	COAL			
. 1 F'dry.	from Han	ging Roc	k Ores	.\$25.00	@ 5	26:00
8 11	49	45	45	. 23.00	@ 3	14.00
1 Mill,	8.6	66	86		@ -	_
1 F'dry,	from Al	abama,	Georgia	ß.		
and Ten	nessee Ore	38		23.00	01	14.00
	from A					
	nessee Ore			. 22.00	@ 5	3.00
1 Mill, £	rom Alaba	ma, Geor	gia and	d		

No. 1 F'dry, from Hanging Rock Ores. \$23.00 @ 24.00 1 Mill. " 1 Mill. " 29.00 @ 23.00

86	1 F'dry	from	Alaha	ma	Georgia		
	and Ter	nessee	Orea.			23:00 @	24:00
6.6	2 F'dry.	from	Alaba	ma.	Georgia		
	and Ter	nessee	Ores			22.00 @	23.0
6.6	1 Mill, 1	rom A	labama,	Geo	orgia and		
	Tenness	ce Ore	8			. 21.00 @	25.0
No	. 1 F dry.	from	Missou	ri Or	es	24.00 @	25.0
86	5 11	4.6		4.6	*****	24.00 @	25.0
6.0	1 Mill,	66		6.5	*****	25.00 @	26.0
		COL	D BLAST	CHA	RCOAL.		
Car	Wheel f	rom Ha	anging	Roci	k Ores	85.00 @	40.0
	84 6	· T			es	28.00 @	
	86 8	4 A	labama	and	Georgia		
	Ores					28.00 @	38:0
Car	Whool f	rom Ke	memokra	One	No.	98:410 (3)	

#### RICHMOND.

Mr. Asa Snyder, Iron Merchant and Furnace

	May 15:	, va., writes as follows under
(accor	ding to bran	Charcoal Pig Irons
(accord	ding to bran	Charcoal Pig Irons 24.00 @ 28.00
Va. hot	blast Coke I	Pig Iron, No. 1 ex. 24:00 @ 25:00
		" No. 2 ex. 22.00 @ 23.00
86 61		No. 3 ex. 19:00 @ 20:00
Virginia	Anthracite.	. No. 1 ex 25.00 @ 26.00
84	66	No. 2 ex 23 00 @ 24 00
86	61	No. 3 ex 21 00 @ 22 00

#### CLEVELAND.

Messrs, C. E. BINGHAM & Co., 25 West Main

	FOUNI	RY II	RON.			
No. 1 Lake Sup No. 2 " No. 1 Anthracit No. 2 " No. 1 Bitumino No. 2 " No. 1, Cherry V B—1	e	Sent	*****		26:00- 25:00- 23:00- 25:00- 23:00-	-4 m. -4 m. -4 m. -4 m. -4 m. -4 m.
No 9 W		9.6	0 = 0		26.09-	-4 m.
No. 1 Massillon B-1 No. 2					27:00-	-4 m.
CAR WI	HEEL AND	MALI	LEABI	E IR	ON.	
No. 8 Lake Supe No. 4 " Nos. 5 & 6 "	erior Cha		*****		\$26.00- 27.00- 28.00-	4 m. 4 m. 4 m.
Nos. 1 and 2 Lal	ke Superi		arcoa	1	827-00-	-4 m.
No. 1 Gray White and Mott					\$22.00-	-4 m.

#### BALTIMORE.

Messrs. Wyeth & Brother, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of May 16: The trade movement continues slow, though there is rather more doing than for several weeks past, while the feeling is, for the most part, less depressed. We quote the market improved, with unaltered list:

AMERICAN REFINED BAR IRON.

1 to 6 wide by 3½ to 1 thick. ... 9½ to 2 4-10c. ... 10 to 4½ wide by 1½ to 2 thick ... 9½ to 2 4-10c. ... 10 to 4½ wide by 1½ to 2 thick ... ... 2½ to 2 4-10c. ... 10 to 10c. ... 10 to 10 AMERICAN REFINED BAR IRON.

| 1010 | 11c. | 10c. |

mission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of May 16: We have no change to note in the Iron market since our last. Market dull, with sales at quotations:

Messrs. R. C. HOFFMAN & Co., Iron and com-

Baltimore	Charc	coal		 	 								.8	30	1	00	0	32	5.0	0
Virginia	5.6												-	98	H	no	a	32	1.0	n
Anthracite	No.	1		 										23	1	00	0	24	1.0	Ö
0.9	No.	2											. !	21	-	90	0	25	5.0	Ö
6.5	No.	3											. !	20	19	00	00	21	1.0	0
White and	Mott	led.	 				۰			 		 	1	17	•(	00	0	19	0.0	Ó
					_	_											-			
						•														

#### FOREIGN.

#### FRANCE.

FRANCE.

(Montteur des Interets Materiels).

PARIS, April 30, 1876.—Metals.—The Continental Metal markets have remained unusually quiet. It would seem that the uncertainty and uneasiness which prevail in financial circles at Vienna, Berlin and here are co-operating in impedieg a revival, which would otherwise have taken place. Although money is easy enough, capitalists proceed with the utmost caution in lending it even for the purpose of fostering the most solid commercial or industrial undertakings, for foar of locking up their funds. Investments in the Metal trade, which would have been of daily occurrence under ordinary circumstances, are now shunned, however solid and promising they may appear. Copper forms an exception, on account of the confidence which it inspires from a statistical point of view. Beside, there are certain powerful importers at London and Havre. Chili Bars have continued in their upward course, although the advance has been slow. At Paris the metal has also improved a little. We quote, deliverable at Havre: Chili Bars, 207 50 francs; Common ditto, 202-250; Incots, 215; Tough Cake, 212-250; and pure Corocoro ore, 207-50, all cash here. There is little doing at Havre, where first brands Chili Bars are worth 203-73 to 205 francs; good current ditto, 202-250 to 203-75; and Lota and Urmeneta, 201-25. 77a.—The European Tin markets are still very much insettled, but there is evidently an undercurrent of reviving confidence. The stocks have not varied much for some time past. Shipments from the East have been, and for a time will be, on a reduced scale. Deliveries are satisfactory, considering the times, and the whole aspect is undergoing a favorable change. The metal is, however, neglected here at 63 to 03-70 francs; Spanish, ditto, 55; and Relgian and German, here, 55; 80, flaver is quiet freely. We have remained steady here, with a moderate business has been done at London at well supported from Silesia. The market has been well supported from Silesia. The market has been well supported from (Moniteur des Interets Materiels).

Revie

In Per per i cleare Bosto vance since dence ince dence since of the bosto for Country Plumb in about for Create 1/ttons.—commi per ton 125/... 1, 1875. the pre Marsei 200; to 200; to 200; to 200; to 200 control of the pre ton the pre ton the pre ton the pre ton 200; to 200; to

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#### BELGIUM. (Revue Universelle).

RELIGIUM.

(Revue Universelle).

BRUSSELS, April 30, 1876.—Iron.—The revival in Belgian Iron industry has not yet developed as much as had been expected. Still there is a decided improvement in the general aspect. Our leading establishments have got a great many small orders on hand, which, when put together, form a respectable total, but the prices obtained by them are still rather low, and leave but a small profit. Some of our works have been rather anxious during last month or two to procure orders, even at the smallest profits, and in this manner rates have been depressed. The execution of orders is proceeding with extraordinary rapidity now-a days in our midst. While the stagnation lasted, which set in at the close of 1873, most of our well-to-do Iron establishments have completed their assortment of tools and machinery, and they are now better fitted than ever to attend to whatever demands there may be forthcoming. Thus one of the works has just received from Russia most extensive orders for railway rolling stock, as well as for an Iron bridge. \*Coal.\*\*—The Coal market is gradually weakening, but we are now arriving at such low values that a favorable reaction cunnot be distant, notwithstanding the approach of the warm season. Our mines have deemed it advisable to reduce their current extraction considerably, and instead of accumulating, stocks will be decreasing, Some few of the mines form an exception; producing as they are able to compete to advantage even with English Coal. Foreign competition is still great in our markets, but the present low ruling will diminish it.

(Borsenhalle).

Handurgh, April 29, 1876.—Metals.—The position of the Metal trade in Central Europe is a peculiar one just at present. On the one hand, we have the spring revival, and corsumers being light-stocked the prospect is rather a cheerful one; on the other hand, our business relations with Southeastern Europe are disturbed by the threatening political aspect in those countries, with which Germany does a large business at all times. The general result will probably be that we shall do a moderate business during the ensuing months. Copper.—The consumption of this metal is increasing at such a rapid rate all over Europe, in consequence of the introduction of various and valuable new alloys, that prices are firmly sustained, although we have become more quiet in the German markets. Berlin is steady at 87 to 89 marks. Here and at Stettin there is no change. Tin.—Shipments from the East have decreased comewhat, while the deliveries to consumption continue on a liberal scale. A decidedly upward turn has therefore commenced to develop not only in England, but also on the Continent. In Germany, however, consumers have been so much scared by the late heavy drop that we are recovering but slowly. At Berlin, Banca commands 88 to 88-50, while English Refined is bringing but 79 to 79-50. Hamburgh and Stettin unchanged. Lead.—Although there is a good demand for Sweden and Russia, our markets are but feebly sustained. At Berlin, Tarnowitz, Harz and Sxonian are quoted 22 to 22-50 marks. No change can be reported either from here or Stettin. Speller.—The demand for this metal is again improving, both in England and this country. At Berlin, Silesian Union is worth 24 to 25 marks. At Breslan, Kramsta has been paid 23-50. The metal is quiet and unchanged here.

#### HOLLAND.

(Koch & Fiterboom).

ROITERDAM, May 1, 1876.—Tin.—A greater firmness is observable in this market, and Banca, spot, has from 48% advanced to 48% guilders. The asking price now 1849. Stock on warrants in the hands of the Netherland Trading Society on the 1st instant amounted to 84,755 slabs Banca, against 105,316 slabs Banca and 2653 slabs Billiton in 1875. The deliveries during the past four months of the year have been 28,057 slabs Banca, against 40,875 in 1875, and 100 slabs Billiton against 500. There are now on the way from Banca, in sailing vessels. Sood piculs, against 11,300 in 1875. The stock of Billiton in the hands of private importers amounts to 37,055 slabs. (Koch & Vherboom).

#### AUSTRALIA. (Resident.)

BRISBANE, March 1, 1876.—Tin.—The Australian yield of pure Tin in 1875 has been 6082 tons, against 7019 in 1874. As the furnaces are rapidly increasing, these figures will, no doubt, also rapidly increase during the present year. I am creditably informed that the actual cost of production has been slighly reduced during the past year; in some works, owing to improved management, a very considerable saving has been effected. The future supply is certain at even present prices. I can hold out no hope of a shorter supply, even at a further fail of £10 per ton. The result of the past year's figures is that we supply one-fourth of the whole Tin of the world. It has also demonstrated that we can supply the article at a less rate or cost than any other place in the world, and a reduction of 50 per cent, in price has barely affected our supply. If to these facts be added that there is over six months' stock in London, and that, by to-day's telegrams, the market is fluctuating and falling, the quotation for Australian being 76/, it is evident that prices must come still lower, to choke off supply, and the weakest must evidently go to the wall. We have another and more formidable supply not far from us. Tasmania, in another twelve months, will make its supply severely felt, as from advices I have received, their prospects are far in a way superior to ours. The railway to Stanthorpe is to be proceeded with as soon as Parliament meets. This will cause a further saving of about 17 per cent. in production, and will considerably increase supply. These different items had better be known and studied, let the result be what it may.

Gilgillan, Wood & Co.)

SINGAPORE, March 22, 1876.— Tin.—The advance to \$22 per picul, noted early in the month, was not maintained, the price having declined to \$21.50 per picul, and then to \$21.37% per picul, the last being the closing quotation. Supplies lately have not been coming forward freely, and the same is reported of the Penang market. We expect that the shipments to the United States this month will be moderate. In Penang unemelted Tin has declined to \$20.87% In Penang unsmelled Tin has declined to \$30.87% per picul. Freights.—The Juan F. Pearson has cleared for New York, and the Albert Russell for Boston, leaving both berths vacant. Exchanges advanced to 4/ for 6 months sight credit bills, but have since declined, and it closes with a downward tendency at \$71.3% per \$1. Cleared per Albert Russell, to Boston, 1956 piculs Tin.

(Attken, Spence & Co.) (Attken, Spence & Co.)

Colombo, April 4, 1876.—Phumbago.—Our last quotations remain unaltered. The demand for London and the States is fully equal to the supply-Shipping.—The Polly is still loading, principally Plumbago and Cocoanut Oll; her lay days will be up n about ten days. Another small vesset is required to follow. Exchange.—Rates have gone slightly were during the fortinght, but close steady, at 1.9% for Documents. Bank selling hat 1/9. Private credit rate about 1/9.5-16. Quotelinas.—We quote free on board, without freight and commission, exchange at par, including packages per ton, and duty: Lump, 289/; Chip, 189; and Dust, 1287.—Total exports to the United States from Oct. 1.1875, to April 4, 1876, 39,690 cwts. against 20,331 the preceding year. To England, 36,679 cwts.; to Marseilles, 285; to Trieste, 382; and to Australia, 39; to all countries, 68,267.

een ere ego-ters sea-tive nsy-ting oint

on hand, whilst the pig iron producers are common the Plimpton wheels would be at a necessarily in a similar fix. The only matter worthy of notice in connection with the whole trade is that Messrs. E. P. & W. Baldwin, of the Wilder Works, Stourport, have issued circulars announcing a drop in their sheet iron of 20/per ton. Their lead is likely to be followed by other houses. In no other respect is there any change—despite the fact which, in ordinary times, would be important—that production in South Yorkshire and Derbyshire is almost altogether stopped, owing to the miners' strikes.

LAUNCH OF THE INFLEXIBLE.

An immense crowd of people assembled at Portsmouth, on Thursday, for the purpose of witnessing the process of the Inflexible iron-clad launch, and to see a real, live princess—the Princess Lauise—christen the vessel. The cere-circular and the see a real, live princess—the Princess Lauise—christen the vessel. The cere-circular and the see a real, live princess—the princess Lauise—christen the vessel. The cere-circular and the see a real, live princess—the princess Lauise—christen the vessel. The cere-circular and the see a real live princess—the princess Lauise—christen the vessel. The cere-circular and the see a real live princess—the princess Lauise—christen the vessel. The cere-circular and the see a real live princess—the princess Lauise—christen the vessel. The cere-circular and the see a real live princess—the princess Lauise—christen the vessel. The cere-circular and the see a real live princess—the pr worthy of notice in connection with the whole trade is that Messrs. E. P. & W. Baldwin, of

Princess Louise-christen the vessel. The ceremony "went off" successfully, and the big vessel was set afloat with what the newspapers are pleased to term "great eclat." Now as to the vessel itself. It is the broadest ship of the class ever yet built, the breadth of beam being 75 feet. Its tonnage is 11,000, the positive weight of armor alone being 3552 tons. The length is 320 feet, draught of water forward 231/4 feet, aft 241/2 feet. The engines, made by Elder & Co., of Glasgow, are 8000 indicated horsepower, and are expected to reach 14 knots an hour. The vessel will, ordinarily, carry 1200 tons of coal, but could if needful take 2000 tons. There is a central armored citadel for the majority of the men sre still out, no definite arrangement having been arrived at, although several interviews have taken place between the above the water line, the armor protection being carried six feet below the water. In the citadel are two turrets placed en echelon, so as to command a fore and aft fire on each broadside. The guns will be four of 81 tons each. This toy vessel has cost the trifle of £600,000, or something like \$3,000,000, United States currency! Surely there is a limit to this sort of idiocy!

#### MR. RUSKIN'S VAGARIES

have come to be looked upon in this country as perfectly harmless, albeit most people are inclined to pay some respect to the man for his past services to the cause of art. His most recent "idee" is the St. George's Company, which is to enroll under its banners all sorts of persons in different parts of the country, who are piedged to love each other to abandon are pledged to love each other, to abandon rivalry, to abbor all shams, to hate humbug, to work for a common good, to pluck out and utterly exterminate all that is deformed or ugly, with many other notions of an equally Utopian character. Then the brotherhood will buy land and settle upon it in the communistic style and manner so highly approved of by M. Furio, Mr. Robert Owen, and others of that ilk. "Bestide this," said Mr. Ruskin (at Sheffield on Thursday night last), "we will have a government of our own which shall overthrow the government of the country when it is streng enough and has the aid of a million strong shoulders. We shall also have a currency of our own; not in paper, for it is dirty; but in gold, and the coins will bear the impression of St. George and the Dragon on one side, and of Michael the Archangel on the reverse." And in such wise the learned and undoubtedly sincer hearted man talked to about twenty of his disciples here the other evening. Any sane man reading such utter rubbish would accuse Mr. Ruskin of idiocy, but those who know him best indignantly repudiate the insinuation. He is as gentle as a lamb, both in speech and manners, and has a mild, persuasive mode of debating which is calculated to captivate all hearers save the most determined of skeptics. It is one happy illustration of the freedom of our laws that any man, even Mr. Ruskin, may talk sedition, privy conspiracy and rebellion by the mile and meet with no rebuke from the powers that be, provided he has sufficient method in his madness to prevent him from putting his sentiments into practice. Otherwise, I am afraid greatly—aithough I revere Mr. Ruskin as a fine art critic and theoretical revolutionist—that we should suddenly be deprived of that gentleman's bodily presence, and left to mourn that the sentiments and fine and left to mourn that the sentiments into practice. are pledged to love each other, to abandon rivalry, to abbor all shams, to hate humbug, to should suddenly be deprived of that gentle-man's bodily presence, and left to mourn that he, unlike his prototype, had failed to conquer the Dragon—of powerful constituted authori-

#### A STRANGE VISITOR.

Another "remarkable occurrence" has happened "near Wolverhampton." Such matters invariably do take place—"near Wolverhampton." The place must be specially banned by the presiding power dealing with accidents. The blackest murders, the most horrible of manslaughters, most alarming accidents, most exciting incidents, the most harrowing of railway disasters or most dreadful colliery explosions all happen—near Wolverhampton. Now, as the latest contribution to this sort of literature, the heavens themselves have interfered in pened "nesr Wolverhampton." Such maters invariably do take place—"near Wolverhampton." The place must be specially banned by the presiding power dealing with accidents. The blackest murders, the most horrible of manslaughters, most alarming accidents, most exciting incidents, the most harrowing of rail-way disasters or most dreadful colliery explosions all happen—near Wolverhampton. Now, as the latest contribution to this sort of literature, the heavens themselves have interfered in order to swell the list—with a meteorolite. This is supposed to have fallen in a meadow of the wellington and Market Drayton line of railway. Shropshire. It was raining heavily at the time, but there was no thunder-storm. The stone buried itself 18 inches in the ground. It weighed 80 lbs., and has been found to be a mass of miteoric iron in an almost pure condition. I shall await the further development of the evidence in this matter with more than ordinary interest. I view meteorolites with a ordinary interest or ordinary interest. I view meteorolites with a ordinary interest or ordinary interest. I view meteorolites with a ordinary interest or ordinary interest. I view meteorolites with a ordinary interest or ordinary interest ordinary interest ordinary interest o dinary interest. I view meteorolites with some suspicion. I have noticed that they invariably suspicion. I have noticed that they invariably fall in remote parts of the country, where there are but wild, inaccessible moors or boggy morasses, or are discovered by gentlemen whose veracity is not wholly unimpeachable. Now that this particular stone has obligingly fallen in a civilized meadow, and close to a railway station, we shall certainly expect to know more on the subject.

THE SCOTCH IRON MARKET

of 1875. We quo	te as u		
		No. 1.	No.
G. M. B., at Glasgo	w	59/	83
Gartsherrie, "		66/	58
Coltness, "		67/6	59
Summerlee, "		64/6	58
Langloan, "		66/6	58
Carpbroe, "		62 6	58
Calder, at Port Dun			59
Glengarnock, at Arc			59
Eginton, "		58/	57
Dalmellington, "		58/6	57
Shotts, at Leith			60
Kinneil at Boness.			57

TRADES OF SHEFFIELD,

The miners' dispute has naturally tended to deepen and intensify the previously existing duliness of the iron trade. At the Atlas and Cyclops Works, of John Brown & Co. and Charles Cammell & Co., respectively, Sheffield, the majority of the men are still out, no definite arrangement having been arrived at eithough

three months. They allege that in the iron trade proper there were never fewer orders in circulation than at the present time, and that the contracts placed since the beginning of the year are smaller than ever before known. Under these circumstances they are prepared to make no compromise, believing that unless they achieve that which they have notified they will not be in any better position than heretofore.

or trade transactions and prospects there is
Of trade transactions and under existing cir-Of trade transactions and prospects there is very little indeed to be said under existing circumstances. The principal industries of the district are in a state of suspension, and the minor ones are but very indifferently employed indeed. The steel trade is a little steadier, but the manufacturers will shortly be troubled to obtain sufficient coke if the colliers' strike should last.

should last.

The cutlery and various hardware industries are quieter than for many years past—indeed most of the manufacturers have great difficulty in keeping their men employed, even as much as a day or two weekly. In the file trade there is still great depression, and the wages of the foregon, and entires are being lowered.

Is still great depression, and the wages of the forgers and cutters are being lowered.

As I indicated last week, Mr. Mark Firth sailed for New York on Thursday last, accompanied by Rev. Charles E. Lamb and other Sheffield gentlemen. Mr. Firth has visited the United States two or three times previously. He was 57 years old the day before he sailed, last week.

#### NETTLEFOLD'S BIRMINGHAM SCREWS.

Messrs. Nettlefolds, formerly Nettlefold & Chamberlain, have issued circulars advising a reduction in prices of all the leading kinds of screws, as well as an increase of 5 per cent. In their discounts, making, as nearly as possible, a net reduction of 12½ per cent. Black washers are also increased in discount by 10 per cent.

#### SOUTH STAFFORDSHIRE IRON TRADE.

With the exception alluded to at the head of this letter, there has been no change whatever in the general state of trade throughout South Staffordshire and the "parts adjacent thereto." The iron masters state that they can hardly count upon the reduction of 7½ per cent, from the iron workers' wages bringing them much present benefit, but they hope that by that and other concessions the men will enable them to re enter the foreign and colonial marto re enter the foreign and colonial mar kets on fairer terms than at present.

#### FRENCH COMPETITION.

A show room for French hardwares and tools

There is very little work doing in the Principality or Monmouthshire, last week's iron shipments having been 1007 tons from Cardiff, and 3671 tons from Newport. The Tredegar Works are said to have secured an order for iron rails from the Brazilian government which will take when the few reports to execute Sweden confrom the Brazinan government which will take about four months to execute. Sweden continues to take bars and a few rails, and it is rumored that good Dutch and Russian orders are in the market for iron of those kinds. There is some little improvement in the tin plate trade, probably owing to the restricted policy of the manufacturers.

#### THE METAL MARKETS

in about ten days. Exchange.—Bates have gone signify to follow Exchange.—Bates have gone signify to follow Exchange.—Bates have gone signify to follow the fire of the first the follow. Exchange the first the follows. Exchange.—Bates have gone signify to follow the first the follows. Exchange.—Bates have gone signify for following the first the follows. Exchange.—Bates have gone signify the following the first the fir

Tin Plates.
C. Coke, ord. brands. 19/6 to 20/6
C. Coke, best brands. 21/6 to 22/6
C. Char. rod. brands. , 23/6 to 24/6
C. Char. best brands. , 25/0 & upwards.

I. C. Char, best brands. 25/0 & apwards. 31.6 to 40/0

Month ended 31st March.

1874. 1875. 1876.

Tons. Tons.

Exports to United States... 9,282 11,753 6,502

Exports to other countries... 2,596 2,903 3,647

Three Months ended 31st March.

1874. 1875. 1876.

Tons. Tons.

Exports to United States... 2,7866 29,744 21,643

Exports to other countries... 7,066 7,498 9,317

of the In Plate makers held at Gloucester on the 12th inst., a very gloomy tone pervaded everything, and it was complained on all sides that prices have got far below a profitable point. There was some talk at the meeting of working half time only if the present stoppage of one week in three is after trial found to be inadequate to prevent the accumulation of stocks.

"The demand for plates from the States con-

stocks.

"The demand for plates from the States continues to fall off, and we find business extremely difficult to put through. Continental trade, too, which it was so confidently hoped would brighten up this spring, still drags on in a most unsatisfactory condition, and the improvement in this quarter seems farther off than ever.

"Prices remain almost without change since our last. Charcoal Tin, of the 'E. C. C.' grade are quoted 24,6 to 25/, but business, we hear, has recently been done in this grade as low as 24/3. Such qualities as 'Allaway.' Dean,' &c., can be bought at 23/6 to 24, and inferior brands still at 23/, At 21/, Charcoal Ternes, such as 'Dean,' and equal, are readily obtainable, with but little disposition on the part of buyers to operate. For Coke Tin, of what are known as the Oil brands, we call the price 16/6 to 20/6, and for Best Cokes quotations range from 21/6 to 22/6."

Messrs. Harrington, Horan & Co.'s Liverpool copper report of April 29th, is as under: "The improvement noticed in our last has continued, and we have again to record a considerable business in Chill bars at an advance of 30 to 40 shillings per ton. Chill copper charters for the first fortnight of this month were 1700 tons

business in Cbili bars at an advance of 30 to 40 shillings per ton. Chili copper charters for the first forthight of this month were 1700 tons fine, consisting of 900 tons bars and ingots and 800 tons ore and regulus, all for England. On the 20th inst. the Bank of England rate of discount was reduced from 3 to 2 per cent. Business transacted during the forthight comprises about 2800 tons bars at £78 to £80 per ton, and 800 tons ore to arrive here at 15,6 per unit. At the Swansea sale on the 25th inst., 1155 tons ore, average produce 23 13-16 per cent. realized 15/5 per unit. Cape ore sold at 15/7 per unit. Quotations are: Quotations are:

 Chill Bars
 £79. 10/ to £81

 " Ingots
 £85

 " Ore and Regulus
 15/6 to 16/

 Coro Coro Barilla
 17/9

Coro Coro Barilla. 17/9

"Tin.—Market steady, sales of Straits and Australian, at £72; British, at £77, and Peruvian at £63 per ton. Lead.—Market dull at £21. 15/; £22 for ordinary shipping brands, and £21. 5/ for Spanish without silver. Speller.—Market firmer at £24 to £24. 10/ for ordinary Silesian brands."

New Coal Developments .- Last week the Ætna Iron Works, at Ironton, Ohio, received from Willard a block of coal taken from a newly discovered vein near that place. It is perhaps two feet square, and is 51 inches in night, being the full hight of the seam, and is of excellent quality. The vein has been opened in two places, one about half a mile from the railroad and a mile and a half from Willard, the other place about the latter distance from the first, and the same thickness and quality have been discovered in both places. There will be an 80 feet shaft sunk in another place to seek for it. It looks as though the company had succeeded in their search for smelting coal on their Kentucky property. The cost put down at the furnace here is estimated to not exceed seven cents per bushel.

#### The Hubbard Steel Works.

About two months ago the citizens of Hubard, Ohio, were excited by reports that a new steel works was to be established at that place. The excitement gradually cooled down, but thusiasm in its favor, since it is to be started ports from the South for the whole period of for the manufacture of steel by a new process. The patentee makes the following statements however, they amounted to only \$463,836,690, amount of salt :

I herewith submit for your consideration, and trust your favorable action, the following improvements for manufacturing iron and steel over the first. The increase in population in ings, for which I have a patent. This process I have tested at Ironton, Ohio, Chicago, Ill.

I have also to inform you that I have a se cret for making steel from scrap iron and puddle steel in crucibles equal in quality to the best steel ever imported, such as saw steel, file steel, shear steel, bell steel, rifle steel, German steel, silver steel, car wheel steel tires, and Damascus steel, at a very low figure.

I here give a statement of the cost of making steel by my process, in crucibles from scrap iron and puddle steel to be melted in crucibles at a cost of about \$105 per ton, worth in mar-ket from \$400 to \$460 per ton. The statement

of cost by my process is as follows:	
8 crucibles	14:00 12:00 2:00 1:50
Cost of one ton in ingots	79°90 80°00 6°00
Total expenses per ton	05.90

This includes all expenses while running steady, but there must be added from 10 to 15 per cent. for breakages, stoppages and repairs.

#### American Exports.

We take the following from advance sheets of the forthcoming Annual Report of the secretary of the American Iron and Steel Associa-

We present below a table which we have compiled from the monthly report for April, 1875, of the Bureau of Statistics of the Treasury Department, showing the total results of our export trade during each of the 26 years which ended with June 30, 1874. The first 13 years, from 1849 to 1861, were under a partial free trade policy (the low tariffs of 1846 and 1857), and the last 13 years, from 1862 to 1874, were under the present protective policy, which dates from 1861. The figures for 1861, 1862, 1863, 1864 and 1865 are exclusive of the exports from Southern ports. Returns received by our government since the termination of the war show that the exports in 1861 from Southern ports were valued at \$154,136,988. No reliable information has been obtained with regard to the Southern exports during the other years of the war. In this table all shipments of specie are excluded.

GENERAL DOMESTIC EXPORTS IN TWENTY-SIX YEARS

Annual av	Totals	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	Fiscal Years.	
141,757,796	\$1,842,851,345	104,722,026	224,413,148	197,099,732	169,967,814	186,265,094	171,523,494	117,884,310	128, 452, 625	190,672,592	106,980,864	128,408,208	90,607,712	\$ 85,853,726	Raw or Crude Products.	Low Duty Period
36,418,849	\$473,280,035	50,542,437	39,901,791	34,708,626	89,108,683	49,052,887	53,551,701	85, 165, 696	48,216,776	28,853,385	21,977,876	22,524,815	21,668,384	\$28,106,978	Partially Manfac- tured.	y Period.
36,674,289	\$476,765,668													\$17,749,377	Manufac- tured.	
Annual av	Totals			1872							1865			1862	Fiscal Years.	
229,785,249	\$2,987,208,241	384,547,901	340,495,286	283,941,261	301,048,092	305,571,539	222,615,504	280,686,087	252,959,905	387,572,897	81,001,107	75,463,144	99,249,116	\$ 75,456,359	Raw or Crude Products.	Protect
97,908,819	\$1,270,214,652	138,636,438	151,084,296	124,099,942	108,548,993	87,872,543	87,414,017	80,220,222	67,416,096	77,644,663	91,640,548	85,176,267	88,276,256	\$ 67,664,631	Partially Manufac- tured.	Protective Period.
66,518,089	\$864,734,513	90,130,179	83.647,435	68,880,275	73,518,907	62,264,259	61,015.628	63,649,429	63,225,175	52,823,343	86,883,408	58,922,226	62,366,064	\$38,903,885	Manufac- tured.	

The total exports for the first period were \$2,792,997,048, and for the second period, not including Southern exports, \$5,122,157,406. If the Southern exports aggregrated \$154,136,the project seems to have outlived public en. 988 in 1861, it is fair to presume that the exthe war amounted to, at least, \$500,000,000. If, concerning it, which may be taken with a due that sum, added to the ascertained exports from the whole country in the second period, would show an increase in exports of out of the puddling furnaces, with iron or cast- the second period did not probably exceed 35 per cent. It was just 22.6 per cent, in the decade 1860-70. We have thus an increase in our exports, after making due allowance for increase in population, of at least 65 per cent. in the second period over the first. The great waste of productive power, and the serious interruption to commerce caused by the war in the second period, may fairly be regarded as a sufficient offset to the fact that the exports in the second period are stated in currency values, except from the Pacific coast, which are in gold values. Protection, therefore, has increased our exports since 1861, notwithstanding the disturbing influences of a great war, and despite the high prices for labor and all materials and products which that war created.

Coming now to our agricultural exports, included in the foregoing table, we find, by reference to elaborate tables, prepared by Mr. David H. Mason from the Commerce and Navigation Reports of the general government, that they have been greater under the present protective policy than under the previous policy of partial free trade. Without entering into needless details, we compile from Mr. Mason's tables a statement of the exports of three leading agricultural staples, wheat, wheat flour and Indian

in 13 years under protection AGRICULTURAL EXPORTS IN TWENTY-SIX YEARS.

	2.836.539	6.817.676	-
82,038,7	86,745,003	88,629,780	Totals
10,678,9	4,323,700	31,238,057	1861
3,314,1	2,611,596	4,155,153	1860
1,719,9	9,481,824	8,002,016	1859
4,766,1	3,512,169	8,926,196	1858
7,505,8	8,718,053	14,570,381	1857
10,292,2	3.510,626	8,154,877	1856
7,807,5	1,204,540	798,884	1856
7,768,8	4,028,386	8,036,665	1854
2,274,9	3,920,918	3,890,141	1858
2,627,0	2,799,839	2,694,540	1858
3,426,8	2,202,835	1,026,725	1851
6,595,0	1,385,448	608,661	1850
18,257,8	2,108,018	1,527,534	1849
Corn.	Flour.	Wheat.	Years.
Bushe	Barrels	Bushels	Ffecal

od.			Protective Period	e Period.	
rrels our.	Bushels Corn.	Fiscal Years.	Bushels Wheat,	Barrels. Flour.	100
8,018	18,257,809	1869	37,289,579	4,882,033	100
2.835	3,426,811	1868	23,681,712	3,857,947	10
9,839	2,627,075	1865	9,937,152	2.604.549	sn.
816,0	2,274,909	1866	6,579,103	2,183,050	120
888,886	7,768,816	1867	6,146,411	1,300,106	14
4,540	7,807,585	1868	15,040,899	2,076,423	11
0,626	10,292,280	1869	11,557,836	9,481,873	-7
2,053	7,505,318	1870	36,584,115	3,463,333	had
2,169	4,766,145	1871	34,304,906	8,653,841	00
31,824	1,719,998	1872	26,423,080	2,514,635	90
11,596	3,314,155	1873	89, 204, 285	2,562,086	9K
23,756	10,678,944	1874	71,039,928	4,094,094	90
15,003	82,033,737	Totals	359,849,418	39,718,318	207
36,539	6,310,387	Annnal av	27,680,734	3,054,871	=
		-	•		-

904 119 096 819 516 889 147 047 047 149 491 491

After making due allowance for the increase in population, we find by the above figures that the increased exportation of these agricultural staples in the 13 years ending with 1874 is most marked and suggestive. Cavil can only be silent when such incontrovertible facts are presented. If protection produces such results as these, American farmers assuredly have no reason to desire the substitution for it of a less friendly policy. We would not ignore the fact that the farmer's home market is always his best market; but, as he annually relies upon foreign markets to take a portion of his surplus crops, he should know that protection opposes no obstacles to his wishes. It should be remembered, too, that the wheat and corn and other farm products which are sold at home or shipped abroad have cost the farmer less labor in their production and transportation during the last 15 years of protection than in the preceding years, for he has had the use of improved machinery and of a widereaching railway system, both of which have been largely created by the protective policy. Protection stimulates labor saving inventions, and, by building up manufactures and developing the resources of the country, it encourages the construction of railways, and cheapens the cost of railway material, and, consequently, of railway transportation. Not only is less labor required to produce and market a given crop in late years than was formerly required, but the money cost of producing and marketing that crop is reduced by the use of improved machinery and by the extension of railway facilities, so that the ability of the American farmer to compete in foreign markets with foreign farmers is greatly increased. And this is the real secret of the increased exportation of American breadstuffs and provisions in

It is frequently alleged that foreign countries will not buy our agricultural products if we do not buy their manufactured goods. But this is a serious mistake, as has been amply demonstrated by experience. To illustrate: In the fiscal year 1872 we imported iron and steel and manufactures thereof, aggregating \$55,540,188 in value, and we exported 26,423,080 bushels of valued at \$38,915,000, or \$1.47 per bushel. In the fiscal year 1874 we imported iron and steel and manufactures thereof, aggregating \$33,793,546 in value, and we exported 71,039,928 bushels of wheat, valued at \$101,-421,459, or \$1.43 per bushei. In 1872 the value of our imports of iron and steel was more than double the value of our exports of wheat; whereas, in 1874, the value of our exports of wheat more than trebled the value of our imports of iron and steel. The reader will a glance, that our agricultural exports do not depend at all upon our willingness to take foreign manufactures in exchange for them. Foreign countries will buy our breadstuffs and provisions because they must have them or because they are cheap. When the harvest is good in England, for instance, our exports of food products to that country will always decrease; when the harvest is poor, will England, in her extremity, higgle about the quantity of iron and steel we are willing to take from her? She never has done this.

As already stated, our exports were seriously interrupted by the war. Manufactured goods formed no exception to this rule. Our cotton trade was literally almost destroyed, and we are only beginning to recover it. In 1860 our exports of cotton manufactures reached a total of \$10,934,796. In 1864 they had fallen to \$1,456,901. In 1872 the exports were \$2,304,-330; in 1873, \$2,947,528; in 1874, \$3,095,840; in 1875, \$4,990,695. In the current year they \$3,146,493; and in 1875 to \$2,440,802. We send will far exceed in value the shipments of 1875. Similarly gratifying results are shown in the growth of our export iron trade, which, if we Guardian for May 25, 1875, admitted the supeexcept the extraordinary demand for fire arms during the Franco-German war, has more than doubled within the past six years. In the year which ended December 81, 1875, our exports of which ended December 31, 1875, our exports of iron and steel and their manufactures exceeded our imports of these commodities, the exact figures being: exports, \$20,417,635; imports, \$15,273,315. Our exports of leather and its manufactures have increased from a total of \$673,331 in 1870 to \$7,324,796 in 1875. By reference to our table of general exports it will be makers are just now applied in the tron and steel districts. It likewise renee to our table of general exports it will be makers are in the thick of the gricultural implement season, and there is agricultural implement season. erence to our table of general exports it will be seen that the exports of partially manufactured tools worthy of great praise, and which must,

corn, in 13 years under partial free trade, and and manufactured products in the period beginning with the war greatly exceeded, severally as well as collectively, the exports of like products in the corresponding period before the war. The total exports in the second were \$2,134,949,165, against \$950,-145,708 in the first period, an increase of 125 per cent., the increase in population having been, as already shown, not more than 85 per cent. Protection, therefore, has increased, and is still increasing, our exports of manufactured products. It has steadily tended to diminish the cost of these products to home consumers, and the policy that does this must necessarily encourage foreign consumers to buy also in our markets. In saying this, howver, we do not claim for the American people the possession of the ability to export all of the products of their manufacturing skill and enterprise. Various influences, to be mentioned bereafter, will indefinitely postpone the creation of so comprehensive an export trade as England and some other countries, under precisely opposite conditions, have long en-Any inquiry into the influence of protection

stimulating American exports would not be complete, which should omit to mention the character of our exports of manufactured commodities. Nor can this character be clearly set forth in a few sentences. To say that certain American manufactured products have been excellent in quality and cheap in price, else they could not have found purchasers abroad, would but poorly specify their merits. The whole truth can only be stated by declaring that they have won their way in foreign countries by virtue of their superior adaptability to the purposes for which they were desigued. If they had not been better than similar products made elsewhere, they could not have been sold in competition with them; but many of them have been both cheaper and better. A few illustrations will show that the superiority of many of our wares and fabrics is entitled to more prominence than it has generally received.

In 1838 the Baldwin Locomotive Works, of Philadelphia, exported three engines, their first shipment to a foreign country, and up to February 1, 1876, they had exported in all 389 engines, valued at \$5,005,964. The increase in the number of engines annually sent abroad by this celebrated manufactory has been quite marked since 1869, when twelve foreign eagives were built, followed in 1870 by fifteen: in 1871, by nineteen; in 1872, by forty-five and in 1873, by ninety-six. The reaction in the construction of railroads in all countries commenced in the year last named, and in 1874 the number of engines built upon foreign orders fell to 58, and in 1875 to 18. An increase in foreign orders for delivery in 1876, has, however, occurred, amounting up to May 1st to 40 engines. Of these, 15 were shipped in January last. Of the 25 yet to be shipped, one very fine first-class freight engine, named after the oldest son of the Emperor of Brazil, is on exhibition at Machinery Hall, in the International Exhibition. This is the export record of one manufactory of American locomotives: other estab lishments have also in late years shipped railway engines to foreign countries. The value of the total exports of locomotives in the last five years is as follows: 1871, \$820,943; 1872, \$774,296; 1873, \$1,109,482; 1874, \$1,145,669 1875, \$761,718. A majority of the locomotives in use on Canadian railways were made in this country. American locomotives are in general use on most South American railways, and on the Continent of Europe, especially in Russia. they are in high favor. The secret of the popularity abroad of these locomotives consists in the superior style of their construction, and the effect of this superiority is seen in their ability to do a greater amount of work than foreign locomotives. Mr. Fairlie, an eminent English engineer, recently remarked: "You may take your best English locomotive with its maximum train, and the American will go be fore it; drawing it and its train, and one-half nore beside."

It is a well known fact that European railway cars do not compare favorably with those of American manufacture, in elegance, lightness or durability. It is, therefore, not surprising that the exportation of passenger and freight cars should have become a prominent feature of our export trade. In the fiscal year 1874 we shipped to foreign countries 1083 cars, valued at \$1,151,898. In the fiscal year 1873 we shipped 394 cars, valued at \$510,861 and in the succeeding six months, which ended with December 31, 1875, we shipped 283 cars, valued at \$323,220. These cars were sent to Mexico, South America, England, Germany, Canada, Australia, the West Indies, Turkey and other countries. The Pullman palace car amazes Europeans by its completeness and ele-Our street passenger cars are largely exported, and furnish the model for many of the street cars constructed in Europe. Street railways are themselves an American inven-

Our agricultural implements have long dis tanced all competition in foreign markets, and our exports thereof are steadily on the increase In 1871 they amounted to \$1,020,820; in 1872 to \$1,765,078; in 1873 to \$2,513,982; in 1874 to them to all countries, but most largely to Germany and to England. The London Colliery riority of American agricultural implements in the following emphatic manner:

It happens that we are in the thick of the

for the most prosaic of all reasons, win for themselves an advanced position in the road to fame, in which they are destined to pass the goods of some English houses. We confess to something like discomfort, because we have recently seen ordinary hay forks and digging forks of American make exhibited side by side with best British products of the same class in the show rooms and shops of some of the most extensive implement warehousemen in the kingdom, and because we have heard from one of them that he had ordered direct from the trans-Atlante factory one hundred dozen in a single line. "Why should I not?" he inquired; "the American article is better than the best of the same class made in England by 35 per cent. It is 15 per cent. Cheaper, and it 20 per cent. superior in quality." A thorough examination, even to the breaking of one of the forks, has satisfed us as to the accuracy of the last part of this startling statement, and the comparative prices of the English and the American and Abroad," we remarked upon the exemination, even to the breaking of one of the last part of this startling statement, and the comparative prices of the English and the American houses confirmed the former part. The steel of which the forks were produced was of a higher quality than the metal put into the the last part of this startling statement, and the comparative prices of the English and the American houses confirmed the former part. The steel of which the forks were produced was of a higher quality than the metal put into the English forks, and the whole finish of the American product greatly surpassed that of the English. We have no doubt but that the recent troubles of the United States manufacturers have made them willing to sell their goods at as low a figure as is at all compatible with a profit; but that cannot account for the whole 15 per cent. difference; nor will it account for the greater difference in quality. In respect of the United States, our implement makers have to look about them. Not only are their own goods shut out of that market by a prohibitive duty, but our own free trade policy and the manufacturing skill of the Americans have combined to make trans-Atlantic products severely and increasingly competitive with our own in the show rooms of mid-liemen who sell within a few miles of our home factories.

American platform and other scales are ex-

American platform and other scales are exported in large quantities to foreign countries; so are American fire engines, stationary engines and stoves. American sewing machines are known and used in every civilized country. During the past five years the annual value of our exports of sewing machines has averaged \$2,000,000. American fire arms are so superior in style and general excellence that they find a market in every country. All of the leading European countries are large purchasers of them. During the fiscal year 1875 England purchased American muskets, pistols, rifles and sporting guns amounting in value to \$2,419,513. Our total exports of these articles in the last four calendar years (since the close of the Franco-Prussian war, during which the demand was extraordinary) has been as folows: 1872, \$1,165,424; 1873, \$1,548,227; 1874, \$3,613,430; 1875, \$5,184,576.

American hardware and cutlery have been introduced into all markets, and with remarkable success. Even England, our principal competitor in the manufacture of these products, has been forced to acknowledge the superior excellence of many of our tools and "Yankee no-tions." We quote a few extracts from English journals which show how frankly this superior ity is admitted. Rylands' Iron Trade Circular printed at Birmingham, remarked as follows in

July, 1875:

If the Americans make such tools as our workmen prefer, by all means let them make them and send them to us. We cannot always compel a man to use a clumsy article when he can have a handy one at the same price. We have personally examined these tools, and we have no hesitation in saying that they are much superior, by combining lightness with strength; and no doubt a laboring man could, by using the stools, do a far larger amount of work in a given time than he would by using the old-fashioned one that our manufacturers have so long persisted in forcing upon the market. We have now and then brought these American tools under the notice of some of our best and oldest makers; but every time we do this we are met with the assertion that they are so full of orders for their regular patterns that they have neither time nor inclination to produce others. They are ready to admit the superior excellence of what the American makers produce, but there the matter ends. July, 1875: what the American makers produce, but there the matter ends.

The London Iron, for January 30, 1875, contained the following paragraph concerning American shovels and axes:

American shovels and axes:

An occasional correspondent of the Times, writing from the South African gold fields, refers to these tools after a fashion which ought to put Sheffield on its mettle. English mining shovels he praises; those of one maker he describes as very nearly perfection. But, while giving scant commendation to English crowbars and picks, he disparages English axes terribly. "No one here," says he, "will look at an English axe; it was the same at the diamond fields, and also in Australia and elsewhere. The trade in these implements is so large that I think it right to call attention to our neglect of it."

The London Ironmonger, an accepted expothe English hards the following early in the year 1875:

The Ironnonger has, from time to time, drawn attention to the success with which hardwares manufactured in the United States have competed with some of the British firms in certain foreign markets hitherto supplied almost exclusively from this side, at the same time that United States products have been finding their United States products have been finding their way into our own country. The reports to hand from the different bardware districts still that there is little or no revival in the de show that there is little or no revival in the de-mand for iron and hardware products required in Canada. Thither it is well known the United States manufacturers continue to send the goods they make at rates much under those wanted by the English manufacturers. But this is not all. Some of the manufactured goods sent across the Lakes into the Dominion are said to be more handy than the English patterns. Some time ago we reported that the United States iron and hardware manufacturers United States from and hardware manufacturers were pushing their advantage in Australia and in New Zealand. In those markets, likewise, American enterprise is still disagreeably apparent. The worst of it is that not a few of the American goods are declared, as to quality, to surpass our own. As to the Antipodean markets, all that we have here said is borne out by a communication which has been received by a firm of Birmingbam merchants from their agent in Melbourne. He writes as follows: "You will notice our indent runs more on American ironmongery than formerly. follows: "You will notice our indent runs more on American ironmongery than formerly. Their goods are far superior to English made, and latterly they have been much cheaper. There is no comparison in the profits they pay us, and they give universal satisfaction. Small wares, locks, tools, etc., indeed, all sorts of American made goods, are now being sold in the market; and when once used, seen, or sold, the user or buyer will never again look at English made articles of the same class."

The same paper also published in 1875 an in-

The same paper also published in 1875 an interesting account of an incident which oc-

lows:
Last month, in an article upon "Trade at Home and Abroad," we remarked upon the excellence of certain of the edge tools of the United States. When we wrote that we had personal knowledge of merchants' warehouses in our own country in which such products of the United States are shown—shewn, morcover, within sound of the anvils on which good Erglish axes are forged, and almost within sound of the whir of the stones upon which they are ground. Further, we knew then, as we know now, that English hardware merchanis have received from first-class foreign customers instructions to fellow at English factories best felling axes produced in the States; but that an effort to do this was altogether unsuccessful. The American product is nowhere doing us so much mischief as at the Antipodes, where, be cause of its thoroughly trustworthy character, to tool this was altograted to retain form for the contracted to the states. cause of its thoroughly trustworthy character, cause of its thoroughly trustworthy character, a tool that may be bought at perhaps from 6/to 7/m New York realizes in barter from 18/to 20/. It is no joke for an emigrant upon coing into the bush to stake his all upon the edge of an AXE; he is, therefore, ready to pay a good price for a tool upon which he may inflictly rely. Such a tool his experience has satisfied him is supplied from the States, and such a tool his experience equally satisfies him is not always forthcoming—indeed, weight for weight is seldom forthcoming—from British edge tool factories. weight is seldom edge tool factories.

The London Times published the following paragraph late in the summer of 1875:

Our Wolverhampton correspondent writes last night: "English edge tool makers are fully aware of the success with which certain of their business rivals in America have supplanted them in many of our home and foreign markets. So large, however, is the demand at present for good edge tools of almost every description that there are few edge tool firms in the tion that there are few edge tool firms in the tion that there are few edge tool firms in the United Kingdom who have not plenty of orders upon their books. The English article is not, therefore, out of use, but there is a perceptible increase in the favor in which handy and thoroughly excellent tools are held, both at home and abroad; and this is being encouraged by the growing facilities for manipulating steel, both shear and cast. Sensible of this, certain American firms are pushing their opportunity, and American forks, shovels and axes are to be had wherever edge tools are offered in this had wherever edge tools are offered in this

The same paper published the following disoatch from Birmingham, June 7, 1875:

BIRMINGHAM, 5th.—Business in the hardware trades continues fairly steady, notwithstanding the shock of recent heavy failures and the severity of foreign competition. The latter appears to be increasing under the favor of the high prices ruling in this country, and the conditions of production abroad are in many cases so much more favorable than here that foreign manufacturers are able to undersell us even in the home market. From the United States large quantities of mowing machines and other large quantities of mowing machines and other large quantities of mowing machines and other implements, nuts, bolts, etc., are being sold here at prices conciderably under those of corresponding goods of English make, and even Spain is now successfully competing with Staffordshire hinge makers in their own district. Beigium is importing here railway spikes, iron foundry, dog chains, etc., and excellent Prussian wire is offered at from 10 to 20 per cent. under Staffordshire and Lancashire prices.

We have made some progress in exporting tinware, the quantity exported in the fiscal year 1875 aggregating \$60,964 in value, of which England, from which country we receive our supply of tin, took \$1589. A Birmingham correspondent of the London Engineer made the following statement about a year ago:

In the tin plate department of the industry of this district competition has sprung up from an unexpected quarter. For a long time past one of the best customers of the British maker for tin and terne plates has been the United States of America. At one time we were sanding to that country great consignments of tin plate goods in varied shapes and of different values; lately the Americans have learned themselves to use up the tin plates, and now we have shem shipping tin plate wares to this country, made from the tin plates which we have supplied them. The United States manufacturer displays an amount of ingenuity is invention which is but seldom seen in England, and the handicraftsmen in the New World, unlike these of the Old, are ready to adapt themselves to a new pattern as soon as it can be shown that it is at all probable to be a success. The American tin plate goods that are now being offered in Birmingham and South Staffordshire are described as simply marvelous both as to the price of the articles and the ingenuity disshire are described as simply marvelous both as to the price of the articles and the ingenuity displayed in their construction. Surely there is something very wrong in this country when the Americans, after buying our tin plates and paying heavier wages for the manufacture of the article, are able to offer it here at prices much under those at which we can produce it.

All these extracts are in strange contrast with the following argument against our protective policy which formed part of an article in the London Times just 15 years ago, when the Morrill tariff bill was under disenssion :

The duties imposed by this bill are not only immoderately high, but they are levied upon imports of the first necessity. The articles taxed are not mere luxuries, or commodities taxed are not mere luxuries, or commodities entering into the consumption of the opulent alone. It is upon cotton goods, woolen goods, and hardware that the imposts will fall. Cutlery is to be taxed upward of 50 per cent. in the lowest instance; in the highest, nearly 250.

\* It has now become perfectly known that protection in these matters is only another name for suicide; and when a State establishes a prohibitory tariff it is itself the sufferer from its own ordinances. If the backwoods men of America are to be deprived of good axes, and settlers of cheap clothing, the penalty will be paid by them.

\* \* \*

And they are also in strange and even ludicrous contrast with the following complaint from the same Times of April 13, 1876, forming part of an article which piteously beseeches the guide mill, including hooks, small rounds and

United States cotton goods competing with our own in Manchester, but while this tariff exists serious competition there or anywhere else, is an impossibility. The United States will never supply the rest of the world steadily and widely with anything except raw produce under such a fiscal system, and by-and-by the country may find themselves seriously impeded even in that. For the main result of a blind exclusion such as this tariff reveals is to raise the cost of everything in the country that maintains the tariff; food, clothing, every article of manufacture befood, clothing, every article of manufacture becomes gradually very dear, and so weighs on the producing powers of native industries as to that them out from the rest of the world as effectually as foreigners are excluded from

The Times is not consistent with itself. Its tatements of fact prove its mere theories to be deceptive and fallacious. Whistling to keep one's courage up while going through the woods is a boys act which the Times but imitates when, in the presence of a thousand evidences of American ability to compete with British trade in foreign markets, and even in British markets, it refuses to believe the evidences of its own senses and affects to be brave while not concealing its alarm

In preceding references the list of American manufactured exports has not been exhausted. Cut nails and spikes, chilled car wheels, twist drills, wood-working and various other laborsaving machines, wooden ware in endless variety, clocks and watches, pumps and bydraulic machinery, steam excavating machines, Hoe's printing presses, cabinet organs and manufactures of India-rubber are products of American ingenuity which are now regularly exported, and many similar products might be added and still the list would not be exhausted.

Encouraging as is the present condition of our exports of manufactures, this branch of our foreign commerce is susceptible of much greater enlargement; and now that all the conditions of its growth are so favorable, it is fairly to be presumed that further progress will not be delayed. We need to imitate more vigorously than we have yet done the example of our foreign rivals in seeking foreign purchasers. We need to become better merchants than we are; to go from home more and rely upon the home market less. If the late severe shock to our general prosperity should compel our manufacturers and merchants to go abroad for customers whose favors they have not heretofore sought, and if, through a continuance of the protective policy, we can obtain more complete possession of the home markets than we now have, the country will soon retrieve its present losses, and our industrial future will be rendered more secure.

A New Antimony Pigment .- A beauti ful blue color has of late been produced from antimony, which is pronounced very attractive in appearance and very durable, though it is not applicable to plastered surfaces. The metallic antimony is dissolved in aqua regia, filtered through granulated glass, and mixed with a weak solution of prussiate of potash until precipitation ceases. It is said that the product thus obtained can scarcely be distinguished from ultramarine, and, among other useful applications, is found to be very effective in the coloring of artificial flowers. On its being mixed with chrome yellow it gives at once a green color, almost equal in brillancy to the dangerous arsenious compounds, and for which it may be substituted.

Lester Oil Company.—At a recent com-parative test made at the Rock Island Arsenal (Illinois), under the supervision of Lieutenaut Colonel D. W. Flagler, U. S. A., the Synovial oil manufactured by the Lester Oil Company, No. 81 Maiden Lane, New York, fully proved. its superiority over lard oil as a lubricator for machine bearings. Both oils were tested simultaneously. The report states that the lard oil used was pure winter-strained and good. The tests were carefully made by the engineer. under supervision of the master machinist. The Synovial cut out and removed the coating of animal oil, as described by the manufacturers. During the time of this cutting out the observed heat was greater than usual; afterward it was less than usual. The Synovial deposited and kept a bright white lubrication and coasing between the bearing surfaces. The tests proved satisfactorily the superiority of the Synowal in effectiveness and economy over the lard oil.

The Akron, O., Beson says : It is reported that n new enterprise is to be attempted here in the shape of a Novelty Works, to be conducted by Mr. H. G. Bender and a gentleman from Pittsburgh, whose name we have not ascertained. Mr. Bender has been, and yet is, the general agent for the Eagle Fence, and has been using his influence to keep the shops in this city. Failing in his attempts he has purchased the right for the State of Ohio, and with the help offered him, will embark in this new enterprise This new shop will be known as the Eagle Novelty Works, and will not confine itself to the manufacture of iron fences alone, but will purchase such new patented inventions of merit as are offered for sale from time to time. Mr. Bender is the inventor of a new improvement in animal pokes, which will be one of the principal articles of manufacture. The Eagle Novelty Works will hold forth at the old Hame Works, corner of Carroll and Exchange streets, until the business demands more room.

Beatty & Co. started up the Steubenville Iron and Bolt Works some three weeks since. They will make only small iron, such as is made on a

G

squares, etc.

# L. COES

# SCREW WRENCHES.



we would caution them against imitations None genuine unless stamped "L. COES & CO."

and sold as the Genuins Wrench by certain par-ties who seem to rely upon our improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be good evidence that we manufacture a superior Wrench, we wish the trade may not be deceived on the question of originality. Trusting the trade will fully appreciate our recent efforts, both in improvements on the Wrench and in the adoption of a Trade Mark,

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M. H. JONES & CO.

COHOES, Albany Co., N. V.

## Manufacturers of AXES \ EDGE TOOLS.

Goods Stamped and Label unless otherwise ordered, H. JONES & CO.

TEN EYCK AXE MFG.



COLUMBUS, O.



HORACE DURRIE & CO.,

Our Combs are made with extra heavy Trowel Shanks, every Comb WARRANTED. They are not full jewelled, do not infringe upon the rights of any of those manufacturers of new fangled ideas sense Curry Comb that every hostler in the country can use successfully. without undergoing a course of instruction as to the grasping device &c., &c. These Combs are made both open and close back.

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Die Plates and Cies, Genuine Packer Ratchet Drills, Clamp, Die and Common

Lathe Dogs, Barwick Wrench and Pipe Tongs, the Billings Patent Sewing Machine Shuttles, Marlin Spikes, Calkers' Tools, Clinch Rings, Saw Sets, Screw Drivers. And all description of IRON AND STEEL

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Butchers' Choppers, Axes and Hatchets, Grub Hoe and Mattocks, Mill Picks Box Chisels and Scrapers,

Axe Eye Bush Hooks, Socket Bush Hooks, Watt's Ship Carpenters' Tools, Carpenters' Drawing Knives, Coopers' and Turpentine Tools.

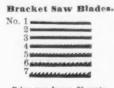
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Soldering Casket.

Soldering Iron, Scraper, Bar of Solder and Box of Rosin. Put up in a nice box. Price, per dozen, \$6.00.

The Bracket Saw trade is now forcing itself upon the attention of all Hardware Dealers, as we have advertised our goods in every part of the country, and given notice that they could be had at the hardware stores at our lowest prices. Any dealer who buys these goods on our recommendation may return them if he finds them in any way defective or not suited to his market. On these conditions not one saw will be returned, but the succeeding orders will be larger than the first.



Price, per dozen, 25 cents.



Wood highly polished.



Large Discount to Dealers.

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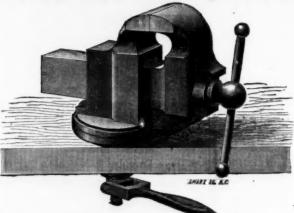


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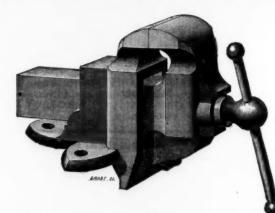
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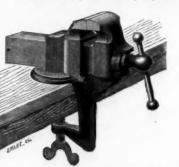
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The Screw being used merely to give the grip, they will outwear any Vises in market.



The Jaws can be instantly opened or closed the full length, by one movement of the hand, without the use of the screw. They combine the QUICK ADJUSTMENT with all the advantages of the best Screw Vises, holding the work with as slight or firm a gri as may be desired, without any liability to far or work loose, as is the case with other adjustable vises,

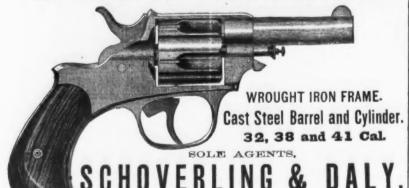


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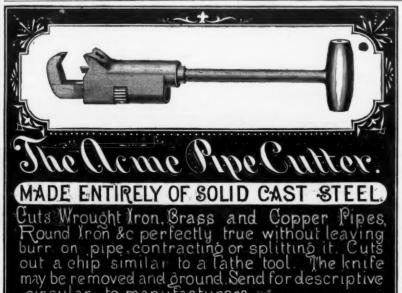
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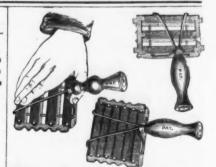
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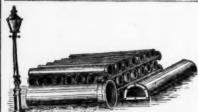
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Ostrander W. B. 10 Ann, N. Y. 2  Agricultural Steels and Irons, etc., Makers of, Farquiar A. B., York, Pa
Tucker & Dorsey, Indianapolis, Ind
Animal Pokes Bishop & Benedict, Beren. O
Fisher & Norris, Trenton, N. J. 28  Asserva, His. etc., Manufacturers of. Cark Wm. A., Westville, Conn. 10 The Conn. Valley Mig. Co., Cetterbrook, Conn. 8 The Douglass Mig. Co., Cet Reade, N. Y. 9 Axes, Edge Tools, &c., Manufacturers of Francis Axe Co., Buffalo, N. Y. 10 Mack & Co., Rochester, N. Y. 10 Mack & Co., Rochester, N. Y. 10 Mack & Co., Rochester, N. Y. 10 Axies, Springs, etc., Manufacturers of. Brown D. Arthur & Co., Fisherville, Concerd, N. H. 12 Cook R. & Sons, Winsted, Ct. 12 Spring Perch Co., Bridgeport, Conn. 12 Tomilinson Spring & Axie Co., Bridgeport, Conn. 12 Hotchkiss Guy C., Field & To., Brocklyn, E. D., 35 Wentworth H. M. & Co., Gardiner, Me. 12 Axie Grease, Makers of Fracer Lubricator Co., 104 Maiden Lane, N. Y. 39 Band Saws and Tools for Brazing &c., Importers O.
The Douglass Mfg. Co., 62 Reade, N. Y
Mack & Co., Rochester, N Y
Cook R. & Sons, Winsted, Ct
Wentworth H. M. & Co., Gardiner, Me
porters of.  Guental George & Son, 39 W. 4th, N. Y
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Baltimore Bell and Brass Works, 53 and 55 Hol-
Williams E.A. & Son, 107 Plymouth, Jersey City, N. J. Blind Hinges.
Hally, Datamore, Ma. Williams E. A. & Son, 107 Plymouth, Jersey City, N. J. Blind Hinges. The Holbrook Patent Blind Hinge Mfg. Co., Water- town, N. I. Belling. Leather. Makers of National States of States o
Arny Charles W., 148 N. 3d, Phils
Maxheimer John, 249 Pearl, N. Y
Forsaith S. C. & Co
Tiebout W. J., 20 Pearl, N. Y. 12 Brass. Manufacturers of. Anso ats Brass and Copper Co., 19 Chiff. N. Y. 2
day. Baltimore, Md
Holmes, Booth & Havdens Aychambers, N. Y. 2 Bickcox Mfg. Co., 280 Pearl, N. Y. 2 Manhattan Brass Co. 83 Reade, N. Y. 2 Miller Edw. & Co., 4 Warren, N. Y. 2
Phonix Brass and Iron Foundry, Allentown, Ps 4 Plume & Atwood Mfg. Co., 30 Chambers. N. Y 2 Scottl Mfg. Co., 421 Broome. N. Y 2 The Wilmot Mfg. Co., 30 Barclay N. Y. and 36 Lehr.
Forsaith S. C. & Co.  Borrax  Forsaith S. C. & Co.  Borrax  The Butts. Makers of  Fichout W. J. 230 Pearl, N. Y.  Baltimore Bell and Brass Works, 53 and 55 Holiday.  Baltimore Bell and Brass Works, 53 and 55 Holiday.  Baltimore Bell and Brass Works, 53 and 55 Holiday.  Baltimore Bell and Brass Works, 53 and 55 Holiday.  Baltimore, Md.  Lenedict & Vose 99 Chambers, N. Y.  2 Davoi John & Sons, 100 John, N. Y.  2 Davoi John & Sons, 100 John, N. Y.  2 Bickcox Mfg. Co., 280 Pearl, N. Y.  2 Miller Edw. & Co., 48 Warren, N. Y.  2 Miller Edw. & Co., 40 Warren, N. Y.  2 Miller Edw. & Co., 42 Broomers, N. Y.  2 The Wilmot Mfg. Co., 50 Barclay, N. Y. and 96 John, Bridgepor, Conn.  Bridgepor, Conn.  Waterputy Brass Co. S2 Beckman N. Y.  Waterputy Brass Co. S2 Beckman N. Y.  Brick Presses, Makers of Carnell F. L. & D. R. 1844 Germantown Ave., Phila. 28  Carnell F. L. & D. R. 1844 Germantown Ave., Phila. 28
Bridgepor. Conn. Werenvy Brass Co. 52 Beekman N. Y. Brick Presses. Makers of Carnell F. L. & D. R. 1844 Germantown Ave., Phina. 98 Schantz Marcus Perth Amboy, N. J. Schantz Marcus Rochester, N. Y. Burtcher and Shoe Kinives. Manifacturers of, Wison Jonn, Sheeffeld. Engiand. Setts and Hinges. Makers of. American Butt Co. Providence. R. I. American Spiral Soring Butt Co. 82 Beekman, N. Y. 40 Union Mig. Co., 86 Chambers N. Y. Western Butt Co. St. Louis. Mo. Torringe Hoits. Makers of. Townsend. Wison & Hubbard, Phila.  12 Carriage Hardware. Makers of.
Leighton Bridge and Iron Works, Rochester, N. Y. 18 Butcher and Shoe Knives, Manufacturers of, Wisson John, Sheffeld, England
American Butt Cc., Providence, R. I
Carriage Bolts, Makers of. Townsend, Wilson & Hubbard, Phila
Car Wheels, etc., Manufacturers of,
Chemical and Physical Instruments. Hall & Harbeson, 191 Greenwich, N. Y
Buck Bros., Milloury, Mass
Chisels. Manufacturers of. Buck Bros., Milloury, Mass
N. Y. 13 Pardee A. & Co., III Broadway, N. Y. 13 Call Vases. Co., Buffalo, N. Y. 13 Call Vases. Sidney State Co., Buffalo, N. Y. 13 Sidney State Co., Buffalo, N. Y. 13 Sidney State Co., Buffalo, N. Y. 13 Catter Drok Wm. 31 Sherry. Phila. 26 Catter Land Spice Mills. 26 Catter Land Spice Mills. 26 Catter Land Spice Mills. 26 Campasses and Dividers. Manifacturers of the Compasses of the Compasses and Dividers. Manifacturers of the Compasses of the
Coffee and Spice Mills.  Lane Brothers, Millibrook, N. Y
Compasses and Dividers, Manufacturers of Benis & Call Hardw. & Tool Co., Springfield, Mass. 12 Cooper's Tools, etc., Dealers in. Little Chas. E., 59 Fulton N. Y.
Corrugated Iron.  Moseley Iron Bridge and Roof Co., 5 Dey, N. Y 5 Cotton Gin Feeders. Manufacturers of The Brown Cotton Gin Co. New London, Conn. See
Strow, Wile & Co., 709 Market, Phila
Cassell I. N., Fredericktown, O
Lawrence Curry Comb Co., 382 2a Avenue, N. Y
Friedmann & Lauterjung, 14 Warren, N. Y. 11 King, Briggs & Co., 80 Chambers, N. Y. 11 May, Frannel, McChambers, N. Y. 11
Lawrence Curry Comb Co., 382 & Avenue, N. Y. 20 Tailery, Importers of. Baker Hermann & Co., 101 Dnane, N. Y. 38 Clatworthy F. & W., 82 Chambers, N. Y. 11 Fisher Jos. S., 41 Commerce, Phila. 11 Friedmann & Labor, 11 Friedmann & Friedmann & Co., 12 Friedmann & Friedmann & Co., 12 Friedmann & Labor, 12 Friedmann, 12 F
lutiery, Manufacturers of.  Burdinshaw Ason, Pepperell, Mass.  Lamson & Goodnow Mfg. Co. 55 Chambers, N. Y. J.  Menden Cutlery Co. 45 Chambers, N. Y.  Miller Bros. Cutlery Co., W. Meriden, Conn.  Nangatusek Cutlery Co., 80 Chambers, N. Y.  New York Kaffe Co., Walden, N. Y.  Dating, Stammes.
Miller Bros. Cutlery Co., W. Meriden, Conn
Hill B. B., Springfield, Mass.  Diamond Tools.  Dickinson J. 64 Nassau, N. Y
New York Mattee Co., waters, N. 1. 11 Dating Stamps. Hill S. B., Springfield, hass. Diamond Tools. Dickinson J. 64 Nassau, N. Y. Bog Muzzles. Mersereau J. & W. T., 62 Duane, N. Y. 15 Deor A larum. Makers of. F. Bakemore. 342 Market, Philadelphia. 36 Deor and Gate Springs.
F. Blakemore, was market, Unitedelphia. 20 Doer an af Gate Sprimes. Quackenbush, Townsend & Co., 59 Reade, N. Y 3, Van Wagoner & Williams, 83 Beckman, N. Y 4, Ben K. 100 b. Maker & Holliams, N. Y 48 The Parker & Williams, 82 Deckman, N. Y 88
The Parker & Whippie Co., 97 Chambers, N. Y. 81 Drawing Instruments.  The Hartford Curve Scribe Co., 294 Broadway, N. Y. 11 Dreaging, and Makers of Dreading Machines.  Am. Dreaging Co., 10 S. Delaware ave., Phila
Am. Dredging Co., 10 S. Delaware ave., Phila
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Hammond H. & Co., Hartford, Conn
Weed N., 4 and 6 Gold, N. Y. 2 Bevaters, Makers of. Crane Bros. Mfg Co., Chicago, Ill.
Holske Machine Co., 279 Cherry, N. Y
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Surder Ward B., 84 Fulton, N. Y
Noter Ward B. 84 Fulton, N. Y.  Barnvers. Collins, Geo. B. 10 Waren, N. Y.  Swinton A., 722 Chestaut, Phil.  Saucets, Brans, Makers of.  Ackata & Harlin Mig. Co., 56 John, N. Y.  Bancers., Self-Measuring, Makers of.  Enterorise Mig. Co., of Pa., Phila, and N. Y.  Self-Collins of Pa., Phila, and N. Y.
Laterorine Mfg. Co., of Pa., Phila, and N. Y
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pared to execute all orders in machinery, such as pared to execute all orders in machinery, such as \*TEAM ENGINES, BRICK MACHINES, BRICK PRESSES AND TILING MACHINERY.

ERY. Also, Steam Fitting, and Iron and Brass Cast-ings. &c., furnished in the shortest time, and in the best

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Especially adapted for Steel and Siemens Furnaces. Range and Heater Linings WOODLAND, CLEARFIELD CO., PA.

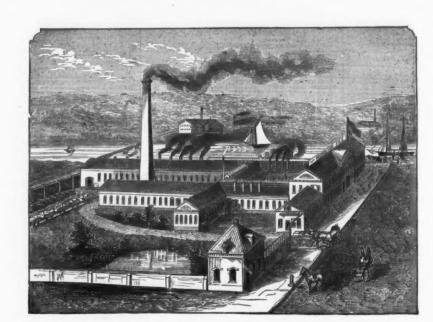
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burning bone for Bone Black. Fire Bricks, Fise
ocks, Cupola and Range Bricks of all snapes and sizes.
e test fire clay from my own Clay Beds at Perth
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FIRE BRICK And Furnace Blocks.

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# Keystone Saw, Tool, Steel and File Works. HENRY DISSTON & SONS,

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making it tighter. The handle, also, is a decided improvement.

# New York Wholesale Prices, May 17, 1876.

HARDWARE.	
Anvila.  American	old la
Anvils. American. F B gold 10%c; over 250 Bs 11c, go Armitage's Mouse Hole gold 1 Wikinson's F B gold 1 Kagle Anvils (American) F B 10c dis 21 Apple Parers.	le le
Domestic	
Union.  Skeleton Paring, Coring and Slicing\$\$ 00 \$\P\$ doz n Bay State, Paring, Coring and Slicing\$13 \$0 \$\P\$ doz n Ctimax Slicer8	et 00
Ash Sifters J. E. Corning's Barrel Head. dis 10 Rival. P doz \$12 W n Square. per doz \$2 50 dis 20 Ausgra and Blus.	et
Ives   list quality,dis 40&10 Beecher(French,Swift&Co) Griswold	100
Beecher (French, Swift & Co)   Griswold   Alba (40 \) Notice Mfg. Co   dis 40 \) Notice Mfg. Co   dis 40 \) Diamond Hardware Co   dis 40 \) Diamond Hardware Co   dis 25 \) Jennings Bits   dis 10 \) Lewis Single Twist Bits   dis 25 \( \text{if 30} \) Andrews' Bits   dis 40 \( \text{if 30} \) dis 40 \( \text{if 30} \) Andrews' Bits   dis 40 \( \text{if 30} \) dis 50 \( \text{if 30} \) Andrews' Bits   dis 40 \( \text{if 30} \) dis 50 \( \text{if 30} \) dis	Maring a
Jennings Bits dis 10 Lewis Single Twist Bits dis 25 @ 30 Andrews Bits dis 40&10	N 20 20
Grisword's Patent Bite. dis 33 Expansive Bits, Clark'small, \$18: large, \$24-mis 33 Ives' \$20 @ \$90-dis 30	A MANA
Jennings' Bits dis 25 @ 3) Andrews' Bits dis 25 @ 3) Andrews' Bits dis 35 @ 40 & 10 & 6 risword's Patent Bits dis 35 & 25 & 6 & 6 & 6 & 6 & 6 & 6 & 6 & 6 & 6 &	8
## Comparison	×
** Stearns** ** 002 \$43 - (118 202 10  ** Tves* Expansive each \$4.50 - (118 40)  ** Universal Expansive .each \$4.51 - (118 10)  ** Also Nove ** 27.51 no serve ** 39. 418 10.00	MMMM
Ogubic Cut Gimlet Birs, Shepardson's	* * * * * * * * * * * * * * * * * * * *
Douglass'	200
L'Hommedieu's Ship Augers	à l
6 10. \$25 00; 4,5 and 9 in. \$25 00 each—dis 10; A wiss, Brad Sets, &cc. Awls, Sewing, Common	
Bhouldered Peg	2
Brad Sets, Alken's	200
Staniey's Excelsior. \$13 50—dis 30&10;	6
** Stanley's Excelsion	5
H. Clark's (J. C. W. & Co.) bron'd or red. # doz #10 W net Hurd s Rator Blade	0
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John Leverett's	
Nobles Mfg. Co	
Elephant	
Light or "Common "	
Brans	
Bed Keys. Gray's Batchet	
Hand, Light Brass	1
** Si ver Chime. dis 20&10 & dis 20&10 & dis 25	
Gong, Abbe's. dis 20&10 \$ " Yankee. dis 35&10 \$ " Barton's dis 35 \$	,
Crank, Taylor's. dis 20210;  Brook #	
Lever, Sargelt's. dis 60&10&10 f	
Hed Keys.   \$\psi \text{doz} \\$ 4 00, dls 15 \$\frac{15}{3}\$	1
Western	E
** Western dis 50-61 (6 10 5 10 6 10 6 10 6 10 6 10 6 10 6 10	I
Dodge's Genuine Kentucky, new list— Nos. 0 1 13/2 3 4 5 6 4 2 10 10 10 10 10 10 10 10 10 10 10 10 10	HH - 02
* Yaw's Genuine. dis 35 € * Texas. dis 35 €  Rethows.	F
Blackspittle, Common, List of Sept. 15 dls 40 %	E
Hand Bellows. dis 10 % doz \$3 dis 20 % Blind Adjusters.—Domestic w doz \$3 dis 20 % Blind Fasteners.	E
Extra and Pittaburgh Pattern	E
Blind Staples. 12 in. and larger. 12 B 57 c	B
tiocks. dis 25 % Olfsrential Pulley Blocks. dis 25 % Fackie, Kope and Iron Strapped, Providence Tool Co.'s list. dis 308:10 % Burr's. dis 10 % Stanley Rule and Level Co. dis 48:40 % Bolts.	L
Tool Co.'s list	NOP
15018a   Cast tron Barrel, Shutter, &c.   dis 60&10 %   Cast Iron Chain   dis 60&10&10 %   Wesneyt Iron Barrel   dis 50, 10&10 %	CH
Bur's   Stanley Rule and Level Co   dis 50&10 \$   Seals   Roll Sacto   dis 50&10 \$   Cast Iron Barrel   Shutter   &c   dis 60&10 \$   Cast Iron Chain   dis 60&10 & dis 50&10 \$   Cast Iron Barrel   dis 50, 10&10 \$   Wrought Iron Barrel   dis 50, 10&10 \$   Shutter   Shutter   dis 50, 10&10 \$   Shutter   Shutter   dis 50, 10&10 \$   Wrought Iron Flash Stanley's   dis 10&10 \$   Wrought Iron Flash Stanley's   dis 50&10 \$   Garrage and Tire   Common   dis 50&10 \$   " " Norway Iron   dis 50&10 \$   " " Norway Iron   dis 50&10 \$   " " " Norway Iron   dis 50&10 \$   " " " Philadelphia   dis 60&5 \$   " " " Philadelphia   dis 60&5 \$   Stove   dis 50   dis 50     " " Shelton's   dis 50&10 \$   " " Shelton's   dis 50&6 \$   " " H. B. & W   dis 50 & 60 \$   " " B. Bering Machines   Upright   dis 50& 60 \$   Borna   dis 50 & 60 \$   Borna   dis 50 & 60 \$   Shelton's   Shaved Head   dis 50 \$   Shelton's   50 dis 50 \$   Shelton's   50 dis 50 \$   Shelton's   50 dis 50 \$   " With Augers   50 dis 50 \$   Shelton's   50	FEV
Garriage and Tire, Common	
* * * * * * * * * * * * * * * * * * *	AAAN
Union Nut Company, old list	BC
Machine	E
Horing Machines. Upright. Angular. Hovey's, no Augers	B
Douglass' no Augers	R
with Augers 750 1000 dis 50 % 675 dis 15 % 8 weets 750 and 15 % 675 dis 15 %	P
Snell's. 4-75 6-25 dis 25 t Phillips', with Augers. 10-00 dis 25 t Phillips', With Augers. 10-00 dis 25 t	
How Pins.   Union Nut Co.  new list dis 50&10&5 \$   100.00  new list dis 50 \$   50	В
Sargent & Co.'sdis 50&10 %	CDH
BFaces,   dis 40&5   Sarbers   Patent.   dis 40&5   Q   S. Backus   dis 40&10   S   Wilson Mfg. Co   dis 40   S   Sportford's Patent.   dis 50   S   Gastrie   dis 50   S   S   S   S   S   S   S   S   S	MNR
	A
Types   Fateni,	B
Sargent's	R
Brackets.—Shelf dis 60& 10 g 55& 10 s 15; ght Wre 4 coods dis 60& 10 k 10 g 55& 10 s 15; ght Wre 4 coods dis 50& 10 g 55& 10 s 11 l Hugs.—Union Not Co dis 50& 20 s 20 s 20; dis 50& 20 s 20 s 20; dis 50& 20 s 20	R
Beatty 8	WA
Hart Mfg. Co	D
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Past Joint, Narrow	DNE

	MCM LOLK MI	
	Loose Joint, Narrow and Broad	1
% d	Parliamen: Butts & Mayer's Hinges	200
cccx	Fast Joint, Narrow	MM
	Fast Joint, Broad, Japanned, dis 394:10 4 Loose Joint. dis 454:10 5 Parliament & Marcelle Harco dis 454:10 8 Parliament & Marcelle Harco dis 454:10 8	N. St. Br. Br.
	Loose 17n, no Acorn. die 42/&10 3	200
tto	Union Mfg. Co.'s Fancy Butts	
3 6	Note   Finds   Note	
6	Fast Joint, Narrow dis Stats Lt. Narrow die 25&5	
	Fast Joint, Narrow & BOUGBT HOM. dis Steet Lt. Narrow dis 25&5 Lister Broad. dis 5&65 Loose Joint Broad. dis 5&65 Table Butts, Beck Flaps, &c. dis 5&65 Inside Butts, Beck Flaps, &c. dis 5&65 Loose Pin With. dis 5&65 Loose Pin With. dis 5&65	
- ST 22	Blind Buts, Parker   dia 65&10 %   Paimer   dis 40 %   Paimer   dis 40 %   Paimer   dis 40 %   Consumer   dis 65 & 65&10 %	
S 15 16 16	** Shepard	1
	Am. Spiral Spring Butt Co. list May 184. die 25 5 Union Spring Hinge Co. die 20 8 Blind Butts, Parker. die 65&10 8  " Seymour. die 65&10 8  " Seymour. die 65&10 6  " Shepard. die 65&10 6  " Nicholson. die 66&10 8  " Nicholson. die 65&10 8  " Huffer. die 353(&10 8  " Garretson, No. 1 die 65  " Clark's, Nos. 1, 3 and 5 die 5&10 8  " Clark's, No. 30 die 5&20 9  Can Openers.	1
	Can Openers.  Messenger's Comet.  per doz \$3:00 dis 20 \$ American.  per doz 225 dis 50 \$	
	Lyman's per doz 3.75 dis 20 s No. 4. French per doz 2.25 dis 50 s No. 5, 1ron Handle per doz 2.25 dis 40 s	
	Can Openers.  Messenger's Comet. per dox \$3:00 dis 20 \$  American per dox 2:25 dis 50 \$  Lyman's per dox 3:75 dis 20 \$  No. 4. French per dox 2:25 dis 50 \$  No. 5. Iron Handte per dox 2:25 dis 50 \$  Spragues Nos. 1 3 4 2 25 dis 50 \$  Fer dox \$4:00 450 500 9:00 9:00 dis 20:00 \$  Star per dox \$4:00 450 500 9:00 dis 20:00 \$  Eureka per dox \$2:00 dis 20:00 d	1
	Star per dox 25 ou dis 2021 % Eureka. per dox 25 ou net Sardine Scissors. per dox 25 ou net Sardine Scissors. per dox 37 ou dis 50 % G, D	1
-	** Double Waterproof, 1-4s, \$1.20; 1-10s, \$1.26c., gold Colt's	1
-	U iton each \$2 75 net Welcome each 2 75 net Curridges.—hetallic. dis 57% @ 5 %	1
	Carpet Sweepers   Union   .each \$2.75 net	1
	Cast Steel, Polished	1
-	Sed. dis 30&10 @ 40 % Plate and Shallow Socket dis 40&10 % Deep Socket dis 40&10 % Cattle Leasers.	ì
-	4 nettle leasers. net Humason, Beckley & Co.'s. dis 80 % Sargent's. dis 60 € 10 € 10 € 10 € 10 € 10 € 10 € 10 €	6
-	Chair	Ē
-	Trace, 5%-10-2. by the cask, \$\tilde{p}\$ pair gold 35 \( \) 57c Trace, 7-10-2. by the cask, \$\tilde{p}\$ pair gold 35 \( \) 57c German Halter Chain. dis 25 \( \) gold German Coil. dis 25 \( \) gold	1741
	Galvanized Pump Chain. ■ 10% is 11c.  Jack Chain, iron	3
	Chalk. # gross, 57c act White # gross, 90c act Red. # gross, 90c act Stuc # gross, \$1.00 act White Orayells # gross, 16%c act	N
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	Thiseis.  Chiseis.  Chiseis.  Chiseis.  Chiseis.  Chiseis.  Chiseis.  Chiseis.  Crossman.  Crossman.  Crossman.  Crossman.  Sischica.  Sischica.  Crossman.  Crossman.  Huck Bros.  Listis 15 (2 17) 45  Hart Mig. Co.  dis 804:10 5  Meirill.  dis 804:10 5	T
	Hart Mig. C. dis 60&10 / 6 ft 60&10 / 6 ft 60 / 60 / 60 / 60 / 60 / 60 / 60 / 60	S
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	Clamps. Iron, Providence Tool Co.'s, Wrt. Irondis 25 % "Adjustable, Gray's	CV
	Classes  (ron, Providence Tool Co.'s, Wrk. Iron dis 25 5  (ron, Providence Tool Co.'s, Wrk. Iron dis 20 5  Adjustable, Gray's dis 20 5  Lambert's dis 20 5  " Snow's dis 20 5  " Hammer's dis 20 5  " Carriage Maxers', Sargent's dis 20 5  Clips, Axle dis 55610 3  Clips, Axle dis 55610 3  Clips, Axle dis 56610 3  Cockes dis 40 8  Superior dis 50 6 5 5 3  Cockes dis 60 6 5 6  Cockes dis 60 6 5 6 6 5 6 6 5 6 6 6 6 6 6 6 6 6 6	M
	Carriage Makers', Sargent's	T
	Cockes	D
	Lock and Globe	RB
	Board and Box	SFLC
	American (Enterprise Mig. Co.). dis 20 % French Stee! dis 20 % The Swift. dis 20 % Use 20 % U	DESERVE
	Compasses and Dividers.  Bernis & Call Co.'s. dis 35&10 %  Cook's. dis 15 %  Events. dis 40 %	BH
	reck Stow & Wilcoxdis 25 % Miller's Patentdis 25 % On the Coopers' Tools.	S
-	Corkscrews	FA
-	Bradley 8	
-	Crucibles.—Gautier & Co	Ba Nici
-	Curring Tongs	H
1	Iotenixias* & Kellogg*s, from & Brass, old list dis 40 %   Fitch s (List of No. 240, \$1)	HASS
	Curtain Pins.—Silvered Glass	N
A TO MA	Turing Tongs   \$\psi\$ doz \$6 50—dis 15 9	H
1	Dippers.  Sritanniaper doz 750—dis 90 %; by bbl. dis 88% % ocoa, Plainper doz \$25—dis 90 %	H
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N. S.	Drills and Drill Stocks.  each \$2 60 net lacksmiths.  reast, P. Self-Feeding each \$7 50 net levent.  Perest, Alken's.  Hotchkias.  Wilson's.  dis 10 \$	M.
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25	Fellos Plates. \$ 50 to £ currency—dis 20 Arcade File Works. \$ 500 to £ currency—dis 20 Arcade File Works. \$ 500 to £ currency	01
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MMMM	Turton Bros, & Matthews	
** **	"Philo Sheffield." P. T. Co. 5 00 to £ go! Limet & Co. (French) 4 25 to £ go! Fluting Machines. Mr. Coles. 5 in., \$6.00; 7 in., \$7.00, dis 15	le
1 × 10	Pony. 4 in., \$478; 5 in. \$5; 6 in. 5:50; 7 in. \$6 dis 10  Knox, 4 inch Bolis. each \$4:25 ac  6 each 4:55 ac  8 each 5:75 to	et et
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* * * *	Diamond	etet
×××	Eureks. No. 1, 7-Inch Roll	et et ex
MMM	Crown4% in. Rotl. \$4*00; 6 in., 4*50; 8 in., 5*50 each no Domestic Fluter. \$1*50 each ac denovs Hand Fluter. \$15 00 per doz no Righting Scissors. dis 53% @ 35	el el el
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	Rick Bros	5
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-	Magoole   Maydole   List   .	20000
	Warner & Noble's dis 203 Hand Cuffs and Log Irons. Tower's Hand Cuffs, 34 W per pair dis 25 2 Log Irons & 50 per pair dis 25 2 Provisence Tool Co.'s Hand Cuffs \$15 per doz dis 10 2	
	Door or Thumb Latches-	
	Nos. 9 1 2 3 4 Per dos \$9790 1'00 1'18 1'35 1'30—dus 60&10 9 Roggiu's Latches \$35. @ 40c. net Bronzed Iron Drop Latches per dos \$1.00 g 1'25 net Wrought Chest dis 60&10 4 Surface Chest dis 65&10@10 3	,
	Surface Chest.	
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	Appie " sastd " 750—dis 20&10 9  Socket " sas'td " 350—dis 20&10 9  " Framing " " 700—dis 20&10 9	
1	File. 4 (U—uis 200210) Auger 6 (20—iis 200210) Auger 100 large 6 (20—iis 200210) Patent Auger, Ives 2 (20—iis 200210) Douglass per sof \$1.25—dis 103 Bwan's per set \$1 (0—dis 200210)	
	Barn Door	
	Challenge         dis 40 §           Harness Snaps.         dis 25c 10 §           Henshaw's.         dis 25c 10 §           Juca's         dis           Fitch's (Bristol)         cus 30 §           Hotchkias'         dis 10 §           Andrews'         dis 25 §	
1	Hotchkias' dis 10 5 August 10 10 10 10 10 10 10 10 10 10 10 10 10	
	Hatchets, - isaiah Blood	
	Claw, " 123.	
2	Claw, 123	
,	Claw, 123. 4 doz 7 m 7/3 8 m Lathing, 128. 4 doz 6 50 7 00 7 50 Yerkes & Plundb	-
8	Shingling, Nos. 0 1 8 8 # doz \$7 50 8 00 8 50 9 00 Claw. 4 1 2 8 # doz \$600 9 50 10 00	-
	Stephant.	
	Ciaw, 4 123	ı
	Juderhill's	
,	Claw	
3	Shinging, Nos. 12 8.   \$4 doz 7 25   \$8 00   \$10 \cdot \$5 \]   Shinging, Nos. 12 8.   \$4 doz 7 75   \$8 00   \$75 \]   Claw,	
3	Claw   Nos. 12   S.   V doz   S   S   S   S   S   S   S   S   S	
1	Justing   Nos.   22   3   4   4   4   5   5   5   5   5   5   5	

96	c Screw Hook and Strap 14 to 36 in .11 c	10 K
et	1 14 in & up, 11 cf 40%	net
26 26 26	Screw Hook and Eye	00 %
%	Socket	0 % 0 %
8 1/2 1/2	Scovill Pattern	0%
139 M		
大学をある	Cotton	0 % 0 %
2 2	" McGill's	20 0 %
% y	Cotton	0% 0% 0%
yty	Haraces (Reading list dis 60&5&1 Coat and Hat, Hart's list dis 60&10&1	0 % 0 % 0 %
y	" Reading dis S&! dis S&! Wrought Staples and Hooks and Staples	0%
v d d d	Whiffletree—Patent. dis 35 de 4	0%
d	Herse Nails. Brass. dis 60&10&10	
d d y	Ausable	Be Be
	Cortiand	ile Se Se
1	National, Pointed and	De De
566	Perkins Pointed and Polished. " 30c 25c 23c 22c 31c 2 Perkins Pointed and Polished. " 30c 26c 24c 35c 23c 23c 24c 25c 25c 25c 25c 25c 25c 25c 25c 25c 25	0e
ttt		le Se
	Blued	4C
ttt	Perkins' and Vulcan	8
ttt	Burden. # keg. \$4.66 ft. I. Horse Shoe Co., PerkinsPattera. # keg. 476 ft. I. Horse Shoe Co., PerkinsPattera. # keg. 571	% %
2000	Mule Shoes	% 00
1111	Boston Rolling Mills Hand Made # B Ice Awis, Chiseis, &c. per doz \$6:50 a American Ice Chisei. per doz \$6:50 a	et
	Novelty Ice Breakers	et et
-	Wood Head Picks, Sargent'sper doz \$1.85, die 60&16 iron " per doz \$1.85, die 60&16 lee Mallets, Pick in Head per doz \$1.75 n	g et
	Horse Shoes.	et
	Promoled Ala 95 G 48	1
	Mnives	XXX
	Table and Pocket	7 ×
	"Plush Tip. dis 10 "Elastic End, No. 8. dis 55 Door, Mineral # doz \$2-25)	K
	Table and Pocket. See Cutte  Knobs. Carriage (Jap'd 80 cents per gross) dis 60&10  Ease—Common. In Plush Tip. dis 10  Ease te End, No. 8	sh %
	Ladles. Melting, Hart's	MM
	Lanters.  "Sargent's dis 55&10  "Reading by Morroe's Patent per doz 84 w dis 55&10  Lanterss.  "Lanterss.	**
1	Poorless No. 5 non-dog \$11:28dig 104:10	00
	Brady's Patent	N N N
-	Lanterns   No. 0, \$11'00 ; No. 1, \$14'00 n     Tubular   Tubular   No. 5, per dox \$11'15-dis 10&10     Peerless   No. 5, per dox \$11'15-dis 10&10     Etns   dis 10 & 10     Peerless   dis 10 &	****
	Brady's Patent	ANNA MEL
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%	Button's Patent
. ne	Gas Pliersdis 25 s
s 30 s 30	Plumbs and Levels
30 35	Stanley R. & L. Co.'s Pat. Adjustabledis 60&10 9
20 10 10 5	Standard Rule Co.'s New Adjustable dis 60&10 % Standard Rule Co.'s Non-adjustable dis 60&10 %
.ne	Johnson's Patent Adjustable
≥10   50  ≥10	Davis' Patent
k10 10 z ne	Judd's Axleper doz \$0.75 dis 40 g
20 9	Brass Screw
210 5	"Clothes Line dis 60&10 % Hay Fork per dec \$4.50 c. dis 60&10 %
210 5 210 5 210 5	Pumps. Douglas Cistern, etc.
10 9 210 9	Union Mfg. Co's. Cistern and Pitcher. new list dis 25 g
210 5 210 5	Rams
75 9 210 9	
10 5	" Leach's Patentdis 15 g
10 9	Rait. dis 30 c
230 230	Iron, Painted # foot 9c-dis 55&10 %
23c	
286	
200	Malleable
22c 20c	9 11 18 15 teeth.
210	Evan's
210	Hunt's
280	Saunder's
559	Iron and Tinneddis 55 %
5 1	Rivers
62 kg	Per lb. 49e 50e 53e 54e 56e 58e 60e 66e 70e
63 %	Road and Levee Scrapers.  Doty's Revolvingdis 25 %
87 1/ 15 00 15 80	Rods.
net	44 American Patent
10 %	Barn Doorrevised list dis 60, 10&10 \$ Noveltyrevised list dis 60, 10&10 \$
net net 10 s	Hope. Manutacturers' List of Mar. 8, 1876.
10 % net	Mand 3-16 inch # 2 15 c
net	Manila Tar'd Rope
net	Reflers.   Revised list dis 60, 10&10 \$   Novelty   dis 10 \$   Repe.   Manufacturers List of Mar. 8, 1876, Manila.
20 4	Sisal 34 and 5-16 inch # B 10%c  Hay Rope. 34 and 5-16 inch # B 10%c
15 % 15 % 25 %	Rules   Boxwood   Ivory
25 % lery	Chapin's. dis 60&10 % dis 50&10 % Stantey. dis 60&10 % dis 60&10 % dis 50&10 %
10 %	Withs Thrait & Son
10 % 55 %	From 4 to 10 lbs
t5 s	Self-Heating
10 %	Sand Paper. Beader & Adamson's Flint. (0) to 14 23 2 20 20 11
10 %	" 2,2½ & 3, 4 % " dis
10 % 10 % 20 %	8tar 30 ream \$3 25 15 %
255 10	New England some list on P. 4 ream \$6 50 @ 11 50
net	Kmery \$\psi\$ ream \$6 50 @ 11 50     New England, same list as B. & A. Flint
net 10 %	Kmery v ream \$6 \( \text{if } \) 1 \( \text{if } \) New England, same list as B. & A. Flint \( \text{dis } 15 \text{if } \) H. B. & M. Roman Flint \( \text{dis } 15 \text{if } \) Sash Cord. \( \text{Corumon} \) \( \text{V B 16 (a 18c. net } \) Patent. \( \text{V B 26c. net } \)
net 10 % 10 %	Willis Thrail & Son.   dis 50&10 \$   dis 50&10 \$     Sad Irons.   From 4 to 10 lbs.   From 5 to 10 lbs.
net 10 % 10 % 10 % 10 % net	Kmery
net 10 % 10 % 10 % 10 % net	Kmety   Fream \$6 50 g 11 50     New England, same list as B. & A. Flint   dis 15 6 5     H. B. & M. Roman Flint   dis 15 6 5 5     Sask Cord.
net 10 % 10 % 10 % 10 % 10 % net	Kmety   Fream \$6 0 g 11 50
net 10 % 10 % 10 % 10 % net 20 %	Kmety   Fream #6 & 9 & 1   56     New England, same list as B & A. Filint   dis 15 5     H. B. & M. Roman Flint   dis 15 5 5     Sash Cord               Common               Each Common             Drab Cotton             White Cotton           White Cotton           White Cotton           Clark's, Nos. 1 and 2, \$10'00 per gross       Clark's, Nos. 1 and 2, \$10'00 per gross       Clark's, Nos. 1 and 2, \$10'00 per gross       Sash Lecks         Walker's           Walker's           Clark's             Clark's             Clark's             Clark's               Clark's             Clark's             Clark's             Clark's               Clark's               Clark's               Clark's                 Clark's                 Clark's                   Clark's
net 10 % 10 % 10 % 10 % 10 % net 20 %	Kmety   Fream # 50 g 11 50     New England, same list as B. & A. Filnt   dis 15 5     H. B. & M. Homan Filnt     dis 15 5 5     Sash Cord                   Common                     Common                   Drab Cotton               White Cotton               White Cotton               White Cotton             White Cotton             Clark's Nos.   and 2, \$10.00 per gross       Clark's Nos.   and 3, \$10.00 per gross       Clark's Nos.   and
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Out Colony				
Pages   Register   100 cm	Shears and Scissors.	die 75&10 \$	METALS	16 Per cent
Pages   Register   100 cm	Seymour's Straight Trimmers	dia 60&10 \$		MISCELLANEOUS.
Pages   Register   100 cm	Barnard's Lamp Trimmers	oz \$10 00—dis 40 s per doz \$3.78	HONDUTY Bars, 1 to 1% cents per lb., Sheet, Band, Hoop and Scroll, 1% to 1% cents per lb. Provided, that none of the above from shell pay a less rate of duty	Hose Pipes, 300 and over.
Service And Service As a service of the company of	Sliding Door, M. W. & Co. list	dis 40&5&2 % dis 50&5&2 %	than 35 per cent. Pig. \$7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, \$8 per ton; Cast Scrap, \$6 per ton; Cast S	High Brass Scrap, 16 cents.
Section   Company   Comp	Russell's Anti-Friction	dis 50&2 %	Plate 1% cents per lb.  Pig Iron—American.	Gilding, 20 cents. Turnings, Filings and Chips, half the price of Scrap.
### A 19 Company of the Company of t				Orders for Goods on this list received on or after thi date, will be filled at the rate herein stated, Terms—Net cash. No discount allowed. Interest to
The property of the property	Ames Birmingham Shovel CoRowland's	dis 20 % dis 15 % dis 25 %	Cottness	ANTIMONY
The property of the property	Old Colonyne Miadleboro' Shovel Co C. E. Jennings & CoNev	ew list dis 10&5 % new list dis 20 % w list dis 30&10 %	Eginton	per ib : Pipe and Sheet, 2% cents per ib.  Spanish
## Action Structure Co	Dunning a Shovels and Scoops	dis 20&7% %	Am. Reined, at mill	6% gold American
## Action Structure Co	Polished Steel	dis 55&2&10 \$dis 50&10&2 \$	American at works, currency ton 38 00 @ 42 00 Old Rails 22 00 @ 23 00 Scrap.	Dar   Gis 10 %   9c     Pipe
## Action Structure Co			wrought scrap 28 00 @ 30 00	Sheet
The content of the	Spokes. North Carolina Handle Co	dis 20 \$	Common Iron.	A., 25c.; B, 20c.; C, 15c.; D, 12c. Th.
Section   Company   Comp	Spoke Shaves. Defiance Metallic	.new list dis 25 %	to 6 in. x % to 1 in	
The column	Bailey's	dis 25&10 %	1 to 6 in. x % to 1 in 1 to 6 in. x % and 3-16, and 1 to 6 in. x 1½ to 2 % 2 2.7c Rods—% and 11-16 round and square	and 10 % ad val. Rallway Bars 1% cents per lb. Rall way Bars, in part Steel, I cent per lb. Provided, tha
The column	Bonneysper d Stearn'sper d	loz \$10.00 dis 40 % loz \$10.00 dis 40 %	Bands—I to 6 x 12 to 5-16	Metal cemented, cast or made from Iron by the Besse mer or pneumatic process, of whatever form or de scription shall be classed as
## State   1.0   1	Spoons.			American Cast Steel.  Teol
## State   1.0   1	By the case	dis 10 %	American and English, American, English,	Homogeneous
## State   1.0   1	Britannia.  Boardman's, new list  Rogers & Bro., A 1		21 to 4	File
## State   1.0   1	Reed & Barton	dis 40 % dis 40 & 5 %	28	Saw Plate, gang and X cut
## State   1.0   1	Nickei Silver Co	dis 30 % %	11 25 to 25 1 10 20 1	Tool, extra fine 50 00 210 100 120 120 120 120 120 120 120
Control   Cont	Tens	1.50 % gross, net 2.75 " net	Patent Planished	Machinery
Tries back time at date of consequence of the property of th			Relgian	Engitsh Steel,—payabje in gold, net.  Best Cast.  Extra Cast.
Tries back time at date of consequence of the property of th	" Axe Stone W B " Slips W B Sand Stone W B	8c \ dis 20&10 % 10c \ 6c—dis 20&10 %	CHARCOAL IRON, 14 5 5 5 6 7 Inch. 12:50 3:50 4:50 5:25 6:50 per doz.	Round Machinery, Cast
Tries back time at date of consequence of the property of th	washita Stone	0. 1. W B 80c net 0. 2. W B 25c net 0. 1. W B 60c net	134 5 535 b 7 Inch. \$5'00 700 9'50 12'00 14'00 per doz.	Blister, 1st quality 1135 2d quality 13 C
Tries back time at date of consequence of the property of th	Arkansas Stone	1, 70 m \$1.85 net 1 70 m \$2.50 net din 10 s	OPPER -Doit . Pig, Bar and Ingot, 5c.; old copper, 4 cents # # ; Matadactured (including all articles of which copper is a component of child years). Mr.	de 2d quality. 115gc 3d quality. 105gc Sheet Cast Steel. 1st apality 95gc
Tries back time at date of consequence of the property of th	Stove Polish. Joseph Dixon's.	W gross, 6 00	valorem. American Ingot	" 2d quality "14%0 " 3d quality "14%0 Flie Steel, Flat and & Round "12%6
Tries back time at date of consequence of the property of th	Gold Medal. # gross Rising Sun. pel	es \$6 00 dis 25 % r gross \$5.75 net	SHEATHING, BRAZIERS COPPER, BOLTS, &C. Braziers Copper, ordinary sizes, over 16 oz., per square 1001.	" Square and Round. "1256" " 1256" " 1256" " 1356" " 1
Tries back time at date of consequence of the property of th	Steel	ases, dis 50&10 % ases, dis 50&10 %	Braziers Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	Taper 3 and 3% inch
Tages, Indian Weight, American. do to the head had been been been been been been been bee	Nickel Platedadd \$2 50 @ Try Squares and T Bevels Star Try Squares and Bevels	#4 00 W doz net dim 45&10 %	Circles less than 84 inen in diameter35c Circles, 84 inch diameter and over38c. "	Silesian, cash
Tages, Indian Weight, American. do to the head had been been been been been been been bee	Disston's Try Squares No. 1	dis 30 % dis 45 % & 2dis 30 %	Locomotive Fire Box Sheets	TIN-DUTY: Plates, Sneets, Tagger and Terns, 1'le per lb.; Electro-galvanized Plates, 2 cents per lb.; Manufactures of, not cumerated & cent schedule.
Early   Competition   Compet	Tacks, Brads, &cList of Januar	dis 20&10 % y 1, 1876.	Bolt Copper 32c. " Copper Bottoms, 33c. # b	Bars, Blockand Pigs, free. Banca, subject to dutyof 10 per cent. Banca. \$260, currency
Trunk, Crist and Pinishing Nail   16 in and over 1   17   18   18   18   18   18   18	"Full "Swedesdi	8 50& 8 65&	Sheathing Copper, tinned on one side, by the	Straits. # B 22c., currency English. TIN PLATES, CURRENCY PRICE
Trunk, Crist and Pinishing Nail   16 in and over 1   17   18   18   18   18   18   18	Carpet, Am. and Swedesdi	s 10de for cash	Case. St. Wallett For less than a case. Sc. Wallett Tinning Sheets, ordinary sizes	1 C 10x14, Prime Charcoai
Care	Brads, Half Weightdi	8 50ec )	O'NEILL'S PATENT PLANISHED COPPER.	I X 10x14, 41
Care	Trunk, Clout and Finishing Nails—	in. and over.	14 and 16 oz. and heavier	D C 125/x17
15   15   15   15   15   15   15   15	Double Pointed Tacks	dis 33%&10%	7 in., 14x52. 8 in., 14x56. 9 in., 14x60 14 and 16 oz. and heavier 39c. By the case, 39c. # 2	
### Tapers   Hensuritary   1.00   1.0	Common and Ring	dis 20&10 ≰ dis 10&10 @ 25 ≰ dis 20 ⋦	14 and 16 og. and heavier	I C 14x20 8°75 8°25 7°25 @ 7°26
The Callan   The	Tapes, Measuring.	dia 20 %	Brass.	Prime Char. 20 qual. Coke.
Theranometers. In Case.  I	Teá Trays. American Tea Tray Co	dis 15 %	Wire.  Brass Manufacturers' Price List.	1 C 20x23 16:50 15:50 @ 16:00 15:00 @ 15:50
Telesco Guiter   Telesco	Tin Case	dis 50&10 \$	October 27th, 1875. Net cash prices for Roll and Sheet Brass, Wire, &c., for quantities of 100 pounds and over at one time. For	ZINUDUTY: Fig of Block, \$1 50 per 100 lbs. Sheet
All Breas thinner than No. 28 is Platers   Breas, at 3. 45	Winsted	B 13c., dis 10 ≰	less than 100 pounds, three cents additional.	Sheet cask 9%c
All Breas thinner than No. 28 is Platers   Breas, at 3. 45	Enterprise Mfg. Co. (Champion)	\$12—als 30&10 %   50—als 30&10 %	Ail Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive	Paper Stock, Old Metals, & c
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Wilson's 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 lbs.,	Tinners' Tools and Machines.	Ate 10 d	\(\lambda_c \notin \notin \text{ advance on each No. above Nos. 28 to 38, inclusive.}\) All Brass thinner than No. 38 is Platers' Brass. at45c	
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Wilson's 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 lbs.,	Trans	dis 25 %	Sheets 24x48 in. and all sheets cut to particular sizes and lengths	" cotton, No. 1
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Wilson's 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 lbs.,	Hotckhissold list dis 30 %; I Blake's Patent.	new list dis 10 %	Shects wider than 30 in and under 40 in	Colored. 34 @ Mixed woolens. 34 @ St.
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Wilson's 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 and over, 20c, 30 to 160 lbs., 18c. 160 lbs.,	Patent Cnocker (Union Nut Co.)	les 16 @ 18c net	0ver14 20, 440c	Soft woolens
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinker than No. 30, 5c, per B.  Metal, in width 36 in. to X thine	Square, doz	2 00 to 2 50 net ox 2 50, dis 10 %	Low Brass. Four cents * 2 more than High Brass.	Kentucky bagging
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinker than No. 30, 5c, per B.  Metal, in width 36 in. to X thine	Troweis. Lothrop's Brick and Plastering.	dis 10 4	Gliding Metal, 7c, # 8 more than High Brass	Kentucky Baie rope
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinker than No. 30, 5c, per B.  Metal, in width 36 in. to X thine	Peace's Plastering.	dis 20 4	Polaned or Polished48c  FOR SLITTING.  Metal, in width 2 in. to % in. to No. 30, inclusive, ic. per	Grass rope
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinker than No. 30, 5c, per B.  Metal, in width 36 in. to X thine	Worrall's Brick and Plastering	dis 20 %	B. advance. Metal, in width 2 in. to 1 in., thinner than No. 30, 2c. per B. advance.	" Envelope " muslin lined
Metal, in width 36 in. to X thinner than No. 30, 5c, per B.  Metal, in width 36 in. to X thinker than No. 30, 5c, per B.  Metal, in width 36 in. to X thine	Butter and Cheese	dis 25 %	Metal, in width 1 th. to % thinner than No. 30, 3c. per B. advance.  Metal, in width 36 in. to 36, to No. 30, 3c. per B. ad-	Soft No. 1 8 Mitted Shavings, No. 2 51/4 Mixed Shavings, part white 4 44/4
** Stevens** dis 15 & 20 s **  ** Simpson's Adjustable dis 25 & 20 s **  ** Simpson's Adjustable dis 25 & 20 s **  ** Stearn's per doz \$2000 dis 25 **  ** Hopkins per doz \$2000 dis 25 **  ** Hopkins per doz \$2000 dis 25 **  ** Hopkins per doz \$1750 dis 10 5 **  ** Stearn's per doz \$2000 dis 25 **  ** Hopkins per doz \$1750 dis 10 5 **  ** Mree! Barrews per doz \$1750 dis 10 5 **  ** Similar Chapman new list dis 15 5 **  ** Similar Chapman new list dis 15 5 **  ** Well Wheels dis 25 5 **  ** Well Wheels dis 25 6 8 5 **  ** Wires List of Oct 27, 1875, net straight and Annealed Nos. 0 6 18 dis 45 6 8 0 5 **  ** Similar dama deled Nos. 0 6 18 dis 45 6 8 0 5 **  **	Vises. Solid Box, Trenton. A) to 160 lbs., 16c.: 16	0 and over, 20c	wance. Metal, in width 16 in. to 16 thinner than No. 30, 5c. per B. advance.	Imperfections, No. 2, best folded shoets. 5  1, Heavy Stock 44  Book Stock, Mixed 34
** Stevens** dis 15 & 20 s **  ** Simpson's Adjustable dis 25 & 20 s **  ** Simpson's Adjustable dis 25 & 20 s **  ** Stearn's per doz \$2000 dis 25 **  ** Hopkins per doz \$2000 dis 25 **  ** Hopkins per doz \$2000 dis 25 **  ** Hopkins per doz \$1750 dis 10 5 **  ** Stearn's per doz \$2000 dis 25 **  ** Hopkins per doz \$1750 dis 10 5 **  ** Mree! Barrews per doz \$1750 dis 10 5 **  ** Similar Chapman new list dis 15 5 **  ** Similar Chapman new list dis 15 5 **  ** Well Wheels dis 25 5 **  ** Well Wheels dis 25 6 8 5 **  ** Wires List of Oct 27, 1875, net straight and Annealed Nos. 0 6 18 dis 45 6 8 0 5 **  ** Similar dama deled Nos. 0 6 18 dis 45 6 8 0 5 **  **	" Peter Wrights	er, 22c di 25 %	GERMAN SILVER MARKET METAL AND WIRE  Market Metal. Wire.	No. 2, fight
** Stevens** dis 15 & 20 s **  ** Simpson's Adjustable dis 25 & 20 s **  ** Simpson's Adjustable dis 25 & 20 s **  ** Stearn's per doz \$2000 dis 25 **  ** Hopkins per doz \$2000 dis 25 **  ** Hopkins per doz \$2000 dis 25 **  ** Hopkins per doz \$1750 dis 10 5 **  ** Stearn's per doz \$2000 dis 25 **  ** Hopkins per doz \$1750 dis 10 5 **  ** Mree! Barrews per doz \$1750 dis 10 5 **  ** Similar Chapman new list dis 15 5 **  ** Similar Chapman new list dis 15 5 **  ** Well Wheels dis 25 5 **  ** Well Wheels dis 25 6 8 5 **  ** Wires List of Oct 27, 1875, net straight and Annealed Nos. 0 6 18 dis 45 6 8 0 5 **  ** Similar dama deled Nos. 0 6 18 dis 45 6 8 0 5 **  **	Wilson's	dis 30&10 %	4 per cent., 12 iii., to X0. 30	Pure Manilas and Hardwares
** Stevens** dis 15 & 20 s **  ** Simpson's Adjustable dis 25 & 20 s **  ** Simpson's Adjustable dis 25 & 20 s **  ** Stearn's per doz \$2000 dis 25 **  ** Hopkins per doz \$2000 dis 25 **  ** Hopkins per doz \$2000 dis 25 **  ** Hopkins per doz \$1750 dis 10 5 **  ** Stearn's per doz \$2000 dis 25 **  ** Hopkins per doz \$1750 dis 10 5 **  ** Mree! Barrews per doz \$1750 dis 10 5 **  ** Similar Chapman new list dis 15 5 **  ** Similar Chapman new list dis 15 5 **  ** Well Wheels dis 25 5 **  ** Well Wheels dis 25 6 8 5 **  ** Wires List of Oct 27, 1875, net straight and Annealed Nos. 0 6 18 dis 45 6 8 0 5 **  ** Similar dama deled Nos. 0 6 18 dis 45 6 8 0 5 **  **	Backus and Union	dis 25 %	19	Binders' Board Cuttings
Amal Chapman   .	Buffalo Stevens'	dis 25 %	more than 16 bs., \$2 per b., het.  Advance 2c. for each additional in., in width above 12	Copper
Amal Chapman   .	aw Filers, Bonney'sper do  Steach'sper do  Honkins' per do	z \$20:00 dis 20 % z \$20:00 dis 20 % z \$17:50 dis 10 %	Inclusive. All German Silver thinner than No. 36 is Platers', at	Pensis 11 6 12 Heavy Composition 14 6 15
Conserved	Wheel Barrows. Canal (Pugsley & Chapman)	iew list dis 15 %	German Silver Scrap one-third less than net price of 12 in. Market Metal. German Silver Turnings, Filings and	Zinc
Conserved	Jacob's Pat. Self-Olling R. R. and Canal Well Wheels. Revised list.	dia 25 %	BRASS AND COPPER WIRE.  Gild'g and  High Brass. Low Brass. Con'r.	* No. 2
Conserved	Wire. Bruss and CopperList of O Bright and AppealedNos. 0 @ 18	et. 27, 1875, net	Nos. 0 to 20	Machinery iron
" Grape, " 10 to 14	" " 19 @ 26	dis 50 @ 55 \$ dis 55 @ 60 \$	Brass Rods, No. 8 and larger 0.26 0.40 0.46 Wire straightened and cut, consider than No. 8 0.40 0.44 0.50	
" Grape, " 10 to 14	Salvanized, Nos. 2 to 9	25 @ 8 %c net	Guring Wire 2 cts. per lb. advance.	Paints. Oils, etc.
" Grape, " 10 to 14	Cast Steel	dis 15 @ 20 s dis 85 @ 40 s	FINE WIRE, BY THE OLD ENGLISH FINE WIRE GAUGE. Gild'g and High Brass. Low Brass. Cop'r.	Biack lamp—Coach Painters w a 20c
" Grape, " 10 to 14	and 11 12	₩ 10 10c ₩ 10 1034c	No. 28	" Ivory Drop, fair
Indicate   Control   Con	Grape, 10 to 14	dis 50 %	NO. 29. 0-48 0·52 0·58   NO. 30. 0·50 0·54 0·62   NO. 31 0·52 0·56 0·66	Blue, Prussian, fair to best
See   Genuine	Judd's Picture Wire	er coll 60c. net	NO. 32	* Ultamarine
No. 28	American Adjustable laxter's Adjustable "S" New List, May 1 " Diagonal "	, '76dis 45 % , '76dis 20 % dis 20 \$	No. 35	Carmine, 40
Manicable   dis 656-10	Collins & Co. 8	die 45 % die 40&10 % die 50&10 %	Ten cents per pound extra for Spooling. TUBLING.	Faris
Number   N	(Malleable)	dis 65&10 % dis 40 % dis 25 %	Plain to No. 30 inclusive, above % in. to 3 in	140   140
Merrick's Pattern	Taft's Pattern	dis 70&10 \$ new list dis 25 \$dis 20&5 \$	Number. Nos. 24, 25, 26, four cents advance on List for each Number.	venetian (N. C.) dry
Wringers	Merrick's Pattern Rrigg's Patent	dis 25&2 % % dis 20&5 %	Above No. 26, special rates.  Plain ¼ inch	Kose Fink. Becklering Alexanderican, Raw. 46
Stamped Tis Ware.   Stamped Tin Ware.   Stam	Wringers. Less than 2 d Providence, with Cog Wheels\$720 Household, without	0 \$70.00 0 \$8.00	All Mandrel Drawn Tubes, 5 cents advance on List Prices.	" In oil
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advanced by the control of the co	Universal, " " 600 with " 72-0	0 58-00 0 70-00 0 58-00	Fancy Tubing, 4 cents advance on List above Piain. English, Scotch and Extra Patterns Fancy Tubing to No. 20, 9 cents above Piain.	" la oll
Without   Group   Series   Group   Ser	Novelty, " 600 " with " 72:0 Sherman, " " 72:0	0 58-00 0 70-00 0 70-00	Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.  Add to 2 cents 4 cent for each additional cutting	verminon, chinese
Tor Set Tubs	Reliance, with 4 600 Excelsior Bench Wringers 600	0 58·00 0 67·00 0 87·00	under two feet. All Mandrel Drawn Tubes under % in., 25 cents per pound advance.	Wate Lead, American, pure dry 10c
Stamped Tin Ware.   Seotch and Extra Patterns.   Stamped Tin Ware.   Stamped Tin Ware.   Stamped Tin Ware.   Stamped Tin Ware.   Stamped Depth and Extra Patterns.   Stamped Tin Ware.	Frown No. 9	0 79-00 0 58-00	Plain ZINC TUBING. 28	wnite, Faris, English, prime
Ommon Stamped Ware.			Scotch and Extra Patterns. 34 4 Per cent. 98	Yellow Chrome 14c 15c 17c 22c
Tanished Tin Ware	common Stamped Ware Stamped Deep and Retinned Ware	dia 10 s	9 4 190 190 190 190 190 190 190 190 190 190	Einc White, American No. 1 dry
	rianished Tin Ware	dls 20 g	1.01	m ollile

Linseed Raw	Prices current pe			,	
Whale, Crade	Single 1		00300		
Winter unblanched	SIZES.	let.	2d.	3d.	1 411
Seal, Extra Refined   200	6 x 8 to 10 x 15 11 x 14 to 16 x 24 18 x 24 to 20 x 39 15 x 36 to 24 x 39 26 x 26 to 24 x 39 26 x 36 to 24 x 36 26 x 36 to 26 x 44 26 x 36 to 26 x 44 20 x 36 to 24 x 36 20 x 5 to 30 x 54 30 x 5 to 30 x 54 30 x 5 to 30 x 54 30 x 5 to 30 x 54	8·50 10·75 12·25 13·00 14·50 15·00 16·00	\$ 6.75 7.73 9.75 10.75 11.50 13.25 14.10 14.50	\$ 6:25 1:25 8:75 9:00 9:75 10:75 11:25 12:00 13:50	\$5.7 6.6 7.7
Sundries   9c	34 x 58 to 34 x 60	18:25 20:75	17-25	15°00 17°25	
	SIZES.	1st.	2d.	8d.	4th.
Dryer, Fatest, Am's   288*t cans, 10*4c; kegs, 9e	6 x 8 to 10 x 15. 11 x 14 to 16 x 24. 18 x 22 to 20 x 29. 18 x 22 to 20 x 29. 26 x 29 to 24 x 20. 27 x 25 to 30 x 25 to 30 x 25. 28 x 25 to 30 x 25.	18-75 11-25 19-75 21-00 23-25 24-00 25-75 29-25 88-25	\$11.00 12.50 15.75 17.25 18.50 21.25 24.50 23.45 25.00 27.75 30.00	\$10:00 11:75 14:00 14:50 15:75 17:35 18:00 19:25 21:75 24:00 27:75	# 9-2 10-5
Funice Stone, selected Lumps	Sizes above 40 x 60—410:00 p inches.  An additional 10 per cent, w more than 40 inches wide.  length, and not making more be charged in the 84 united in biscount 50&5 @ 50&10%.	ill be o	harged s above	for all	Glass

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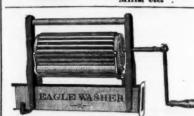
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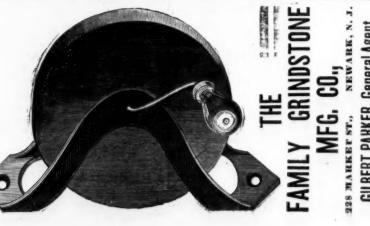
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No. No.

YILLAS.

1 Basement, 1st and 2d story plans of Frame
Villa. Scale indicated on plate.

2 Perspective view.

1 Prespective view, Frame Villa House.

similer to Design Fo. I.

4 1st and 2d story plans of a Brick Villa. Scale indicated on plate.

5 Front elevation of Villa. Scale indicated on

plate.

6 Perspective view.

7 Ground and 2d floor plans of Brick Villa.
Scale indicated on plate

8 Perspective view.

9 1st and 2d floor plans of a Frame Villa .Scale indicated on plate.

5 9 1st and 2d noor plans of a Frame Villa Scale indicated on plate.
5 10 Front elevation.
6 11 1st and 2d story plans of a Frame Villa.
6 12 Perspective view.
7 13 1st and 2d story plans of a Frame Villa.
8 15 Perspective view of a Villa. Plans similar to Design 7.
9 16 1st and 2d story plans of Brick Villa. Scale indicated on plate.
9 17 Perspective view.
10 18 1st and 2d story plans of a Brick Villa. Scale indicated on plate.
10 19 Perspective view of Brick Villa. Plans similar to Design 10.
12 21 1st and 2d story plans of Frame Villa, Scale indicated on plate.
12 21 1st and 2d story plans of Frame Villa, Scale indicated on plate.
12 21 21 st and 2d story plans of Frame Villa, Scale indicated on plate.
13 22 Perspective view.

COTTAGES

COTTAGES.

23 1st and 2d story plans of a Frame Cottag
Scale indicated on plate.

24 Perspective view of a Frame cottage. Plans
same as Design 13.

36 1st and 2d story plans of a Frame Cottage
Scale indicated on plate,

77 Front elevation.

3 28 Perspective view.

49 1st and 2d story plans of a Frame Cottage.
Scale indicated on plate,

78 Front elevation.

30 Perspective view.

40 1st and 2d story plans of a Frame Cottage.
Scale indicated on plate.

Scale indicated on plate.
4 30 Perspective view.
5 31 lat and 2d story plans of a Brick Cottage
Scale indicated on plate.
5 32 Perspective view.
6 33 lat and 2d story plans of a Brick Cottage.
Scale indicated on plate.

To Design 7

9 38 Perspective view of Cottage. Plans similar to Design 7.

10 39 1st and 2d story plans of a Brick and Frame Cottage. Scale indicated on plate.

10 40 Perspective view.

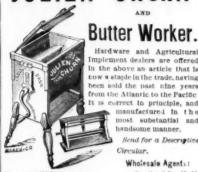
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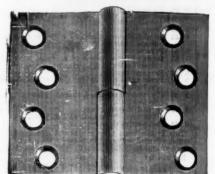
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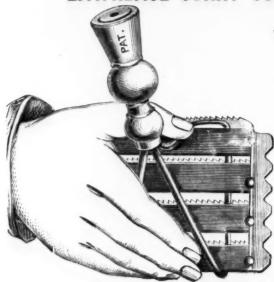
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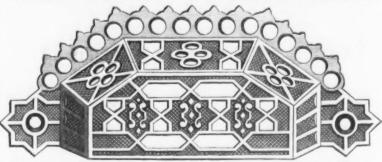
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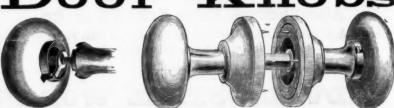
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5	61		66	3	66	10, 4	HOV	Bile	ı
8	41		6.6	814	9.6	0		55c	Ł
%					66	- 6		A	ı
8	Wagon Br	ake Ratel	ieta, eac	h			each.	14 e	1
C	Wrought	Hammer	Strone b	when v	vith g	uard,			1
A M	Wrought	44	or mpm, I	ight [	MILLER	1, 686	h	18 C	١
100	00 ]	Rub Irons	each			4-104	Mirror	9 6	l
8	Stay Chair	Hooks,	each					5%C	ı
4	Double an	d Single 1	ree Cli	ps, figu	re L.	ach.		8 C	ı
16	Stay Chair Double an	66	60		2, (	ach.		9 e	ł
6	Avlo Clins	Round I evis, inch	Part S/ I	Tat 120	3, 6	ach.		.11 0	1
4	Wagon Cl	evis, inch	iding Pi	D. COD	ulete	eaci		100	ł
18	Pole Caps	each	errande v s	ii, con	prete	Carci		240	ı
3	Single Tre	e Haoks,	Nos. 1 a	nd 2				.436E	ı
18	Strap Bol	ts, Rods,	Single	Tree	Irons.	Bol	ster P	lates,	1
18	Brake E	atchets, H	ammer	Strapa	Rub	rons	. Stay	Chain	ı
1,6	Polo Co	Clevis and	of some	lps, 81	ngle	Tree	Hooks	, and	ŧ
	Wagon Br	iv Stanlag	112 to 91	din to	olinol	90 1	0000 811	8 15 %	1
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	Neck Yok	e Eyes, e	ach		111661	Date . W	1000	c net	١
	Wagon Cl Pole Caps Single Tre Strap Bol Brake II Hooka, Pole Car Wagon Bol Wagon II Wagon II Wagon II	** W	rith % ri	ngs, es	ich		75	e net	1
	King Bolt	B. 16, 1, 1h	, and 13	in. at	BH1		W 25 45	c net	1
	Wagon fil	vets, ex. l	arge, flat	, oval	and st	ecpl	8		ı
9	Wagon 12	vote 2.16	an rengt	ns	or or the		834	c pet	ı
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9		& Nat	ls, in 5 th	paper	boxe	a	10 10	extra	ŧ
1%		8.6	in 25 1	b wood	9 00		44 MG	extra	ı
18	Wagon ar	d Hinge	Nafle. 14	In			P B 17	e net	1
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18	Double T	each size ree Plates					65 Re	extra	1
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3 1	Neck Yol	re Plates.					** 103	se net	ı
7c	Band Ir	ce Plates. ap Iron, 1	%, 2 & 2	¼ in. w	ride, s	ame	price }	i th as	4
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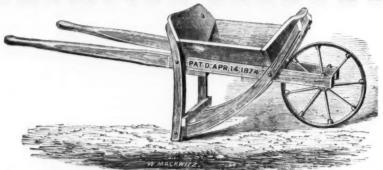
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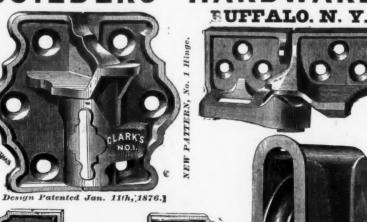
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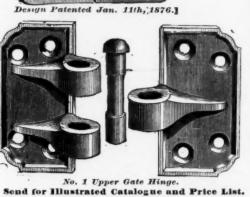
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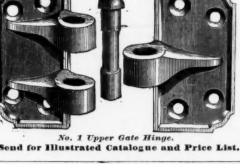
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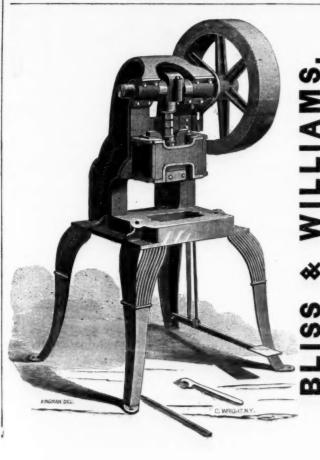




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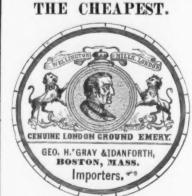


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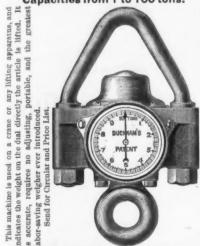
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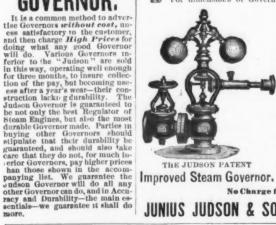
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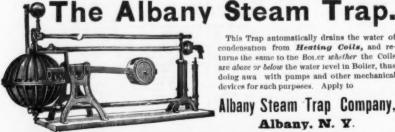
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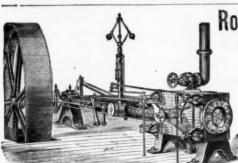
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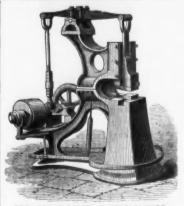
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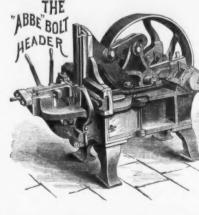


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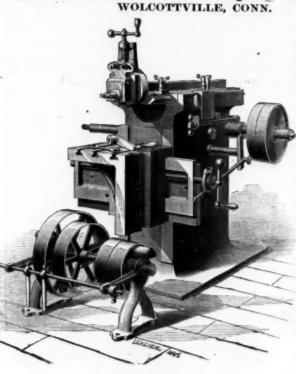
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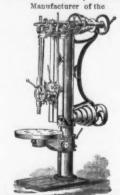
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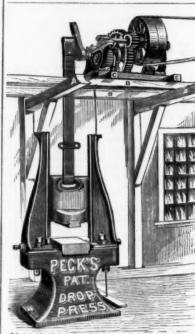
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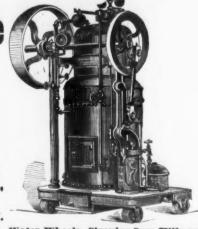
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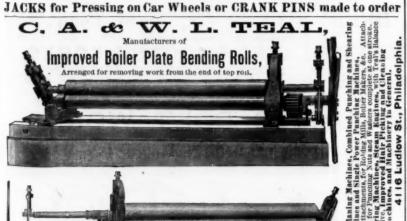
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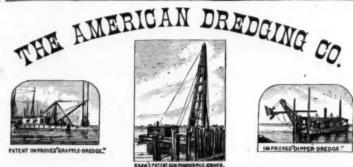
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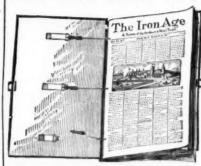
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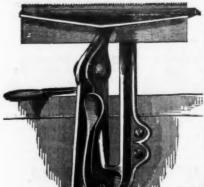
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